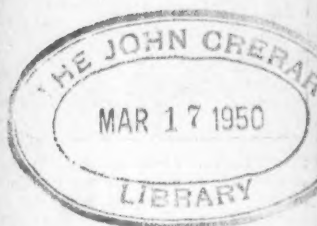


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# CHEMICAL PROCESSING

*The New Magazine of Processing Developments and Control*

## Highlights

of this issue's  
220 articles

• Describing developments in  
processes, techniques, materials,  
equipment

Viscose Processing Aided by  
Continuous Control of Corrosive  
Sph. Bath's Specific Gravity 10

Mechanical-Feet System Provides  
Economical Means of  
Controlling Inflammable-Liquid  
Fires 14

Polymerization of Versatile Intermediate  
Produces Materials of Various Forms, Characteristics 16

Switch Heavy Materials from  
Inside to Outside Storage  
Save 17,000 Sq. Ft. of Plant  
Area for Manufacturing 22

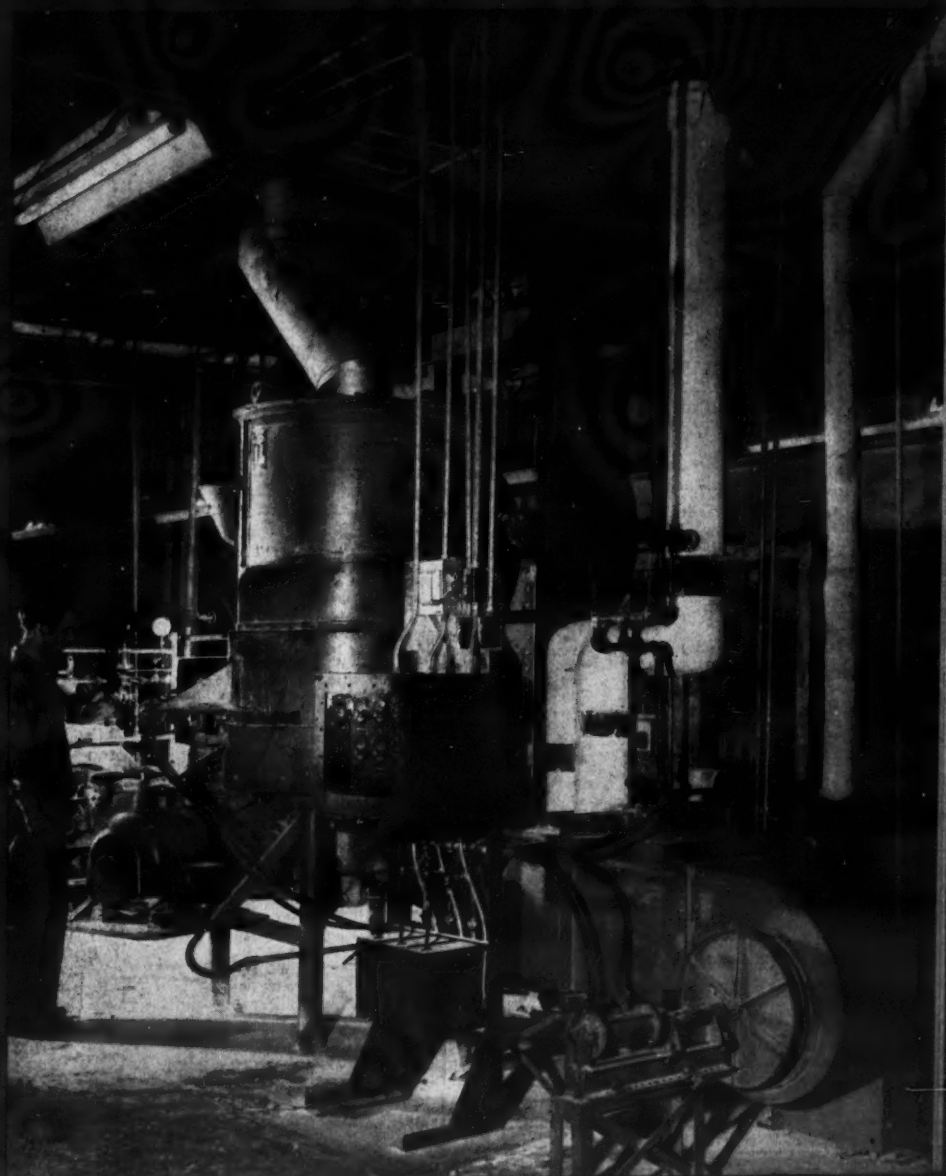
Fast, Accurate Operation Is  
Feature of Assembly for Radiation  
Study 42

Any Irons Move in Non-magnetic  
Materials Detected on  
Belt Conveyor 70

## The Cover Picture

Process pre-mixes ingredients for vinyl sheet so mixture is uniform and sheet has good color, properties. Control panel times each operation automatically ..... Page 8

PUTMAN PUBLISHING CO., CHICAGO



# LIGHTNIN<sup>®</sup>

(MIXCO)<sup>®</sup>

## CUTS HEAT TRANSFER TIME 35%



✓  
**Check the processes you use**  
They can probably be handled  
faster, better, cheaper, by MIXCO  
PROCESS ADAPTED AGITATION:

**Batch or Continuous Processing**

Blending	Gas Dispersion
Mixing	and Absorption
Agitating	Heat Transfer
Dissolving	Emulsifying
Extracting	Circulating
Contacting	Washing
Solids	Reacting
Suspension	Crystallizing
Stripping	Process Control

### Close Temperature Control Yields a Higher Quality Product in Typical Problem Solved by MIXCO Engineered Agitation

When this plant replaced its agitation equipment with a modern Lightnin Turbine Agitator, total heating and cooling time was reduced from 120 minutes to 78 minutes. The 35% saving yields a bonus of more than one extra batch for every three processed. Higher heat transfer rates permit closer temperature control and give a product of uniform high quality.

**PROBLEM:** To heat a 15,000 lb. batch of Oil from 100°F. to 300°F. in 25 minutes. Following reaction, to cool from 350°F. to 150°F. in 53 minutes. 150 PSIG steam available for heating. Cooling water temperature 80°F.

**MIXCO ANALYSIS:** Conditions stated show a heat transfer requirement of 1,320,000 BTU in 25 minutes with a log-mean temperature difference of 142°F. Based on research work, we find that for optimum conditions an overall heat transfer coefficient during the heating cycle of 150 to 180 BTU/HR. (Sq. Ft.) (°F.), will be obtained. Surface requirements on the basis of the lower figure will be 290 lineal feet of 2" diameter tubing, when arranged according to the MIXCO system of vertical tube-baffles. Optimum suspension and proper power consumption will result by using 8 banks of 3 vertical tubes on 6" centers. A similar analysis of the cooling cycle indicated that a time of 53 minutes would be obtainable.

**EQUIPMENT REQUIRED:** 15 H.P. LIGHTNIN Closed Tank Top Entering Unit (Model 3B-WC-1500), having an output

speed of 90 RPM was selected. In order to obtain maximum AVERAGE velocity in all parts of the tank, 3 flat blade turbine impellers were used. The lower turbine was positioned 18" off bottom and the upper turbines spaced 48" apart. MIXCO exclusive data showing the effect of viscosity, specific gravity, proximity, pumping capacity, effect of rotational speed on power consumption and other factors, indicated the use of three 28" diameter multi-bladed turbine impellers. Critical shaft speed data on long over-hung shafts assured safe operation without steady bearing.

**RESULTS CHECKED:** An overall coefficient of 160 BTU/HR. (Sq. Ft.) (°F.) was obtained on this unit, verifying original calculations. The higher rate of heat transfer and absence of time lag in this system made it possible for this user to control the processing temperature within closer limits, yielding a high quality product.

Results like these are the rule, not the exception, in hundreds of plants where LIGHTNIN and MIXCO Mixers are in service. Let us show you how "Process Adapted Agitation" can pay off for you too—in higher production, improved quality and reduced installation and operating costs. For full information, write us the details of your mixing problem today. Use the coupon below to obtain general catalog information.

#### MIXING EQUIPMENT CO., INC.

(MIXCO)

1085 Garson Ave., Rochester, N.Y.  
In Canada: William and J.G. Greay Limited, Toronto

Please send me the literature checked:

- ☐ B-76 Side Entering Mixers
- ☐ B-78 Top Entering Mixers (Propeller Type)
- ☐ B-89 Top Entering Mixers (Turbine & Paddle Type)
- ☐ B-75 Portable Mixers (Electric and Air Driven)
- ☐ DH-50 Laboratory Mixers

Name

Title

Company

Address

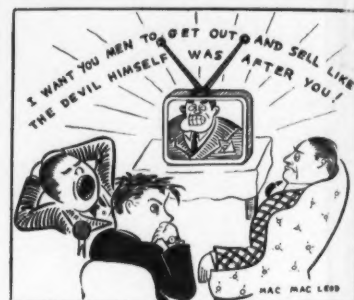


*"That's Interesting"*

#### Televised conventions 'Introduce' top brass to personnel

Conventions and sales meetings now can be conducted simultaneously in 21 cities with questions and answers exchanged in privacy via closed circuit television, according to Du Mont Television Network, 517 Madison Ave., New York.

The service is said to bring interested parties at Chicago and St. Louis, for example, closer to a New York convention



than an actual convention-goer in the back row of a large hall. Questions originating in any meeting at any key city can be answered immediately by company executives assembled at WABD, New York station of Du Mont, and both questions and answers can be heard by every member of every group.

Policies, plans and other matters brought up in conventions "lose much of their power and clarity as they are passed through branch and district sales organizations to wholesalers and dealers," Du Mont officials point out. Televised conventions, they predict, not only will save travel time, but will bring interested members of a big organization "face to face" with top executives, many of whom they have never seen nor heard.

#### Ho - hum

An electronic device that emits a double toned hum is said to induce peaceful sleep. Aptly called the "Slumberbug", the machine is said to be based on the sound of a double-toned fog horn.

#### Want a stretchable ruler?

The above heading is no gag. You can get a stretchable ruler if you want one. A variable scale 12" long made of anodized aluminum is now available. It is fitted with a triangular coil spring which, when expanded or contracted, spaces intermediate points proportionately. When fully compressed, the spring has 100 markings to the inch. When used in relation to fixed basic scales, it can solve problems of spacing, proportion and interpolation. (Ohmite News, Ohmite Mfg. Co., Chicago, Ill.)

(Continued on third cover)

For more information on product advertised at left, specify CP 6551... use information request blank between pages 2-3.



# CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

The News Magazine of Processing  
Developments and Control

VOL. 13

MARCH, 1950

NO. 3

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MARCH, 1950



## For Any Size Motors DEPEND ON REPAIR SERVICE LIKE THIS!

**Example: a Midwest Utility recently burned out a vital 75 hp motor. They called Chicago Electric, their nearby A-C Certified Service Shop, at 11:00 a.m. At 4:00 p.m. the same day, Chicago Electric had the unit repaired and back in service! Total time: 5 hours.**

They maintain experienced personnel and use factory parts or parts of equal quality. They can be relied on for good work at honest prices.

When you need this kind of repair service on motors, controls or transformers, call your nearest Allis-Chalmers Certified Service Shop.

WHEREVER YOU ARE, you can get quick, dependable service from your nearby A-C Certified Service Shop, for there are over 75 such shops in all major industrial areas.

These shops have been selected on the basis of, 1) quality of their work, 2) facilities, and 3) their community reputation.

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by Allis-Chalmers Authorized Dealers;  
Certified Service Shops and Sales Offices  
throughout the country.



**CONTROL** — Manual, magnetic and combination starters; push button stations and components for complete control systems.

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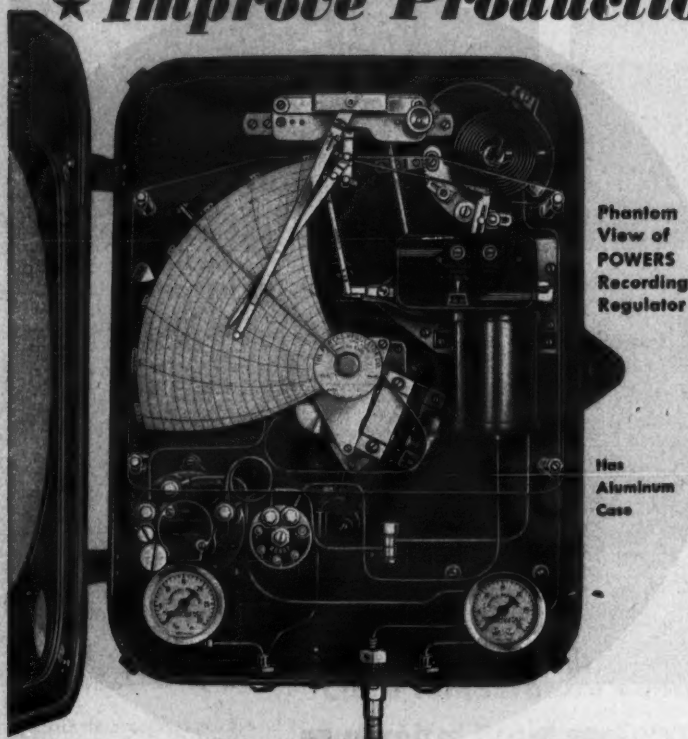


# ALLIS-CHALMERS

When inquiring check CP 6552 on handy form, pgs. 2-3

# ★ REDUCE COSTS

## ★ Improve Production



Phantom View of POWERS Recording Regulator

Has Aluminum Case

with precision control by—

# POWERS

Air-Operated  
INDICATING AND  
RECORDING REGULATORS

For TEMPERATURE • HUMIDITY • PRESSURE

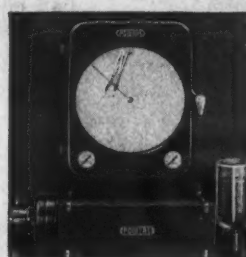
End losses caused by OVER-heating of processes or operations requiring precise control. Install POWERS pneumatic regulators. Their accurate control helps to improve quality of products—speed up production and save steam wasted by overheating.

**Variety of Models:** Recording Thermometers; Recording Regulators; Indicating Regulators; Wet and Dry Bulb Recording Regulators; Time Cycle Recording Regulators; Master and Sub-Master Indicating and Recording Regulators, etc.

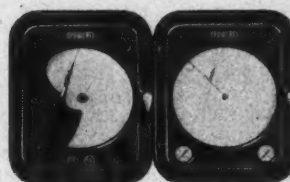
Write for Bulletin 370.

For Better Temperature and Humidity Control and valuable aid in selecting the right instruments for your requirements—phone or write our nearest office. There's no obligation. The Powers Regulator Co., 2756 Greenview Ave., Chicago 14, Ill. • 231 E. 46th St., New York 18, N.Y. • 1808 W. Eighth St., Los Angeles 5, Calif.

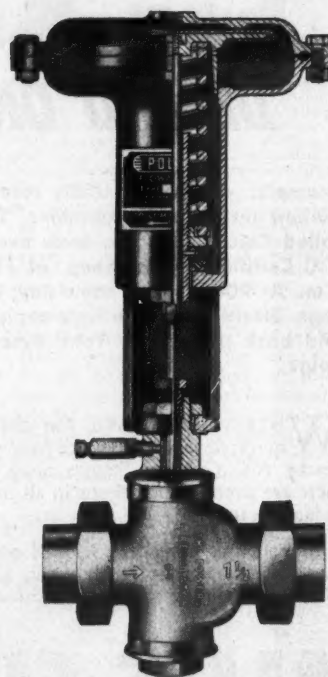
THE POWERS REGULATOR CO. • OFFICES IN 50 CITIES



ABOVE: POWERS WET and DRY BULB RECORDING REGULATOR. Also available as a recorder only. Unit consists of two pen recording thermometer, water pan and motor blower causing sufficient circulation to give proper wet bulb readings.



ABOVE: POWERS TIME CYCLE RECORDING REGULATOR. Cam with cam follower operates steam control valve to correspond with any pre-determined time temperature schedule. Recording thermometer chart record provides a check on the operation of the control.



(108A)

ABOVE: POWERS FLOWRITE VALVE

## ANNOUNCING \$500.00 in annual awards

to readers submitting the most useful fact-articles concerning "New Solutions of Processing Problems"

PLUS

awards of \$25.00 for EACH qualifying "New Solutions" article published in *Chemical Processing*

★

### HERE'S WHAT YOU DO:

Read the rules on page 122. Then tell us, in your own words, about a *specific* case where your own chemical plant, or someone else's, has—

- improved their product
- increased production
- saved time
- cut costs

—or otherwise improved their processing or manufacturing procedures by employing—

- new processes
- new methods
- new materials
- new equipment
- additional equipment
- better material handling

—or by other means of achieving better quality, greater efficiency, etc. (See types of chemical plants receiving *Chemical Processing*, as listed on page 7 of this issue.)

If your "New Solutions" article is worthy of editorial consideration, we will—

- contact the plant
- assemble any needed additional "background" data
- and EDIT the article

★

For EACH reader-submitted "New Solutions" article not previously published, *Chemical Processing* will award the sender—

- \$25.00, payable on publication

### FURTHERMORE . . .

Each \$25.00 award-winning article published in *Chemical Processing* during the initial 12-month period will automatically be entered in competition for the 1950 PUTMAN EDITORIAL AWARDS of—

\$250, \$150 and \$100,

respectively, for first, second and third best reader-submitted "New Solutions" articles of the year.

JUDGING of the three best reader-submitted "New Solutions" of the year will be handled by an Editorial Awards Committee consisting of 10 impartial reader-judges. Members of this committee will be announced later.

[ To assure editorial consideration of your entry, be sure to read the rules appearing on page 122, this issue. ]

When inquiring check CP 6553 on handy form, pgs. 2-3



## 18 Years On A Detour Is Long Enough



By  
DAN M. RUGG

Vice-President & Gen'l Mgr.  
Chemical Div., Koppers Company, Inc.  
Pittsburgh, Pa.

1910-27: const. and supervis'n.,  
by-product coke oven and gas  
plants; 1928-41: VP, Koppers  
Company, Brooklyn, N.Y.; 1942-  
45: VP, Butadiene Div., Koppers  
United Company, Kobuta, Pa.  
(US Syn. Rubber Program);  
1946 to date: VP and GM,  
Chemical Div., Koppers Com-  
pany, Inc., Pittsburgh.

WHETHER our prime objective is preservation of per-  
sonal freedom or preservation of the Enterprise  
itself, one cannot be destroyed without losing the other.

milestones are behind us on the road to state social-  
ism or the welfare state, and our speed increases as the  
narrows toward the point where there is no turning.  
Chief Executive, many government officials (some  
of whom never earned a living except by working for the  
government), heads of powerful labor organizations, and  
many teachers, ministers and dreamers who choose to  
live only with ideals—not to mention subtle, well-organ-  
ized subversive forces whose allegiance is to another  
cause—urge us further and faster down this road.

Before about 1933 the pace was slow. The effect of each  
step could usually be determined before another was taken.  
A notable exception in the 20's, and before, was govern-  
ment encouragement of raids on the public treasury by  
various groups, particularly veterans.

Many of the more rapid steps in sacrifice of personal  
freedom after 1932 included "made" work at government  
plants (WPA); attempts to eliminate ruinous competi-  
tion by prohibiting merchants from selling below a mini-  
mum price (NRA); government ownership of, and  
interference with, utilities (TVA); increases in federal  
taxation almost to the point of confiscation, preventing, to  
a dangerous degree, the accumulation of future capital;  
government regulation of agriculture at tremendous  
cost.

Emergency measures were for the general good. Others, taken  
in an emergency, were never retracted.

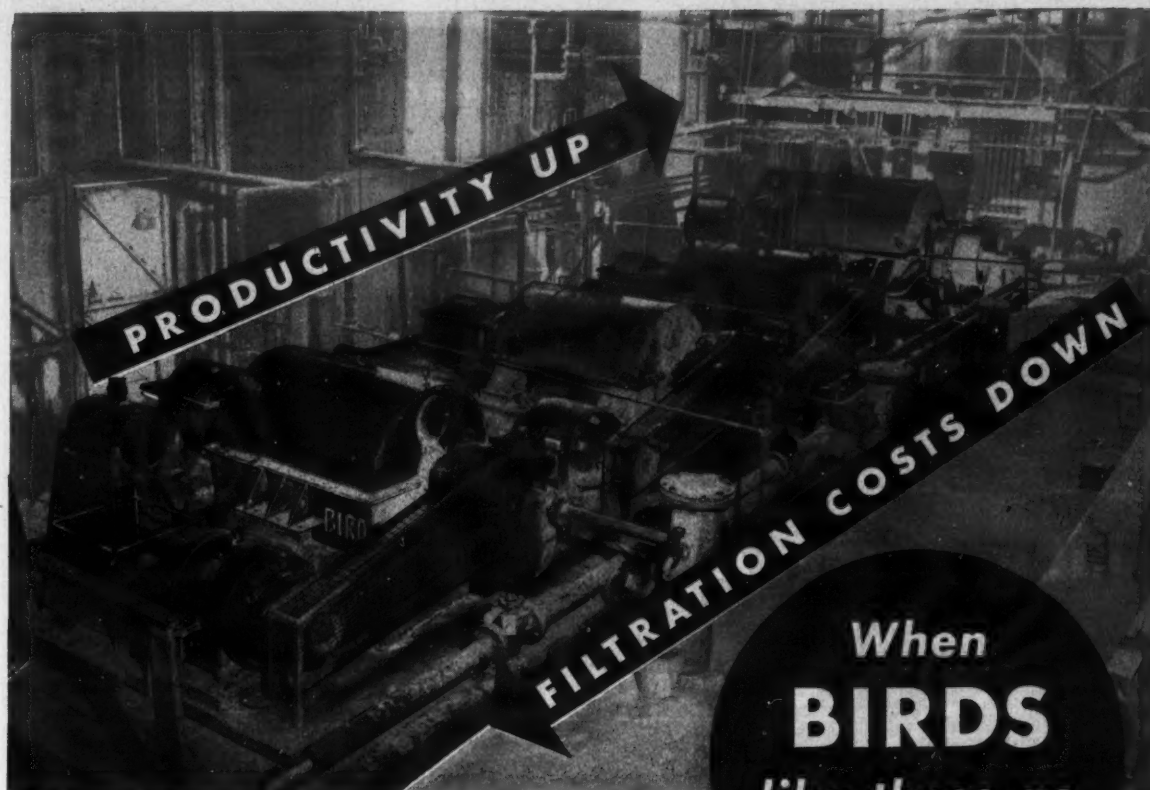
Efforts to accelerate the pace toward state socialism is  
dangerous; yet many are unaware of the danger.

A European-born business associate, returned from abroad,  
said that recovery of each nation's economy is directly  
proportional to the opportunities to exercise free enter-  
prise. France and Belgium, particularly, are making  
rapid recoveries. The English, by contrast, must stand  
for a permit before doing anything.

Many of us in technical circles, and in management of  
industrial enterprise, had little but a technical education  
with which to start. We know that, under the Enterprise  
system, everyone who applies himself, studies the princi-  
ples of organization, and works, saves and invests wisely,  
has a chance to own his own business or be head of  
a corporation.

Let us acquaint ourselves, our friends and employees  
with the gravity of the situation. If the case is clearly  
against most of us have the same objective.

Let us unite to select representatives, legislative and  
administrative, who believe in these principles.



When  
**BIRDS**  
like these go  
on the job

It's the same story in plant after plant. First, one BIRD  
Continuous Centrifugal Filter is tried. Then, a battery of  
BIRDS takes over the entire filtering job.

**BIRDS do the Job better** — they produce a drier cake  
— handle either thick or thin feeds — temperature makes  
no difference — feed solids can vary widely in particle size

**and easier** — operation is continuous and automatic —  
no cloths, no filter media, no vacuum, no auxiliaries

**and faster** — feed is accepted continuously and directly  
from the evaporator, crystallizer or reactor — material is  
retained in the Filter for less than a minute — there is no  
temperature change

**and cleaner** — as the picture shows, the filtering opera-  
tion is completely under cover

**and cheaper** — the filtering process is simplicity itself —  
no operating labor — minimum supervision — minimum  
floor space — low cost of installation, operation and  
maintenance

*Want to find out what this BIRD can do for you?*

SEND FOR THIS BOOKLET. It's the picture  
story of the Bird Research and Development  
Center and how it can help you to tell in  
advance exactly what this modern filtration  
method can do to improve your product, in-  
crease output and reduce cost.



**BIRD MACHINE COMPANY**  
SOUTH WALPOLE • MASSACHUSETTS

When inquiring check CP 6554 on handy form, pgs. 2-3

Page 5

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DOUBLE CHECKED ✓ FROM RESEARCH TO INDUSTRY

# GET

**WATER SPOT RESISTANCE**

**HIGH TEMPERATURE STABILITY**

**REDUCED COST**

BY USING SHARPLES

## DIETHYLAMINOETHANOL 246

with fatty acids in your floor wax formulations.

### WATER SPOT RESISTANCE

Since this amine evaporates with the water from the wax film after application, water spot resistance is extremely high.

### HIGH TEMPERATURE

Standard floor wax formulations using Diethylaminoethanol 246 do not gel when kept at 125°F. for 168 hours.

### COST

Amines which produce formulations of equal quality are usually more expensive on either a pound or mol basis.

For prices and technical information write to Dept. D



**SHARPLES CHEMICALS INC.**

123 SOUTH BROAD ST.  
PHILADELPHIA 9, PA.

When inquiring check CP 6555 on handy form, pgs. 2-3

## Highlights

(Continued from front cover)

These articles have been selected by the Editors  
as having unusual interest

- ★ Efficient Pre-blending of Ingredients Assures High-quality Vinyl Sheet . . . Muller mixes resin, stabilizers, plasticizers and pigment thoroughly to provide product of uniform color, desirable properties . . . 8
- ★ Improved Plasticity in Molding Eliminates Rejects of Intricate Rubber Parts . . . Polymer, added directly to base formula, does not affect hardness or other properties adversely . . . 12
- ★ Bearing Surfaces Heat Up Much Slower with Molybdenum Lubricant . . . Stable material may be used alone or with oils or greases; prevents seizure and failure, even though oil is burned out . . . 16
- ★ Insulation Board Mill Revises Presoak Procedure to Get Better Pulp . . . Points to possibilities of using method on hardwoods, cotton linters and flax shives, besides groundwood . . . 17
- ★ Speeds Furnace Copper Brazing; Conserves Material . . . Copper in paste form replaces conventional rings, foil, slugs and electroplate in many applications . . . 22
- ★ Odor of Crystal-clear Plasticizer Is Missing; Acid Number Cut to 0.05 . . . Improved dioctyl phthalate has Hazen number less than 100; keeps other desirable properties . . . 24
- ★ Move Corrosive, Inflammable Materials Safely in Non-sparking All-aluminum Trucks . . . Inside surfaces are all smooth; entire unit is easily washed down and steam cleaned; does not absorb odors . . . 32
- ★ Transport Bulk Materials in Weatherproof Bottom-hopper Dump Trailers . . . Handle bulk materials usually requiring bagging; flow from unloading hoppers easily controlled . . . 34
- ★ Push Heavy Loads Along Roller-track Set Flush in Floor . . . 10' sections easily lifted out for cleaning or inspection; system includes turntables, angular turns . . . 37
- ★ Eliminate Point-by-point Method of Plotting Relationship of 2 Variables . . . Chart drive of recorder is controlled by signal input; plots any 2 variables as X- and Y- coordinates . . . 50
- ★ NBS Develops New Time-saver for Measurement of X-ray Diffraction Patterns . . . Direct-measuring "photomicrometer" is accurate and easy to read; useful in measuring stress, strain . . . 56
- ★ Simplified Descaling Process Uses Fused Alkali Bath; Saves Time, Metal and Labor . . . Used on items from stainless steel to iron castings; eliminates costly acid disposal facilities . . . 58
- ★ Automatic Sampling for The Laboratory . . . Device puts liquid sampling on 24-hr basis; dispenser offered as accessory for automatic, timed filling . . . 78
- ★ Design Package Imprinter as Integral Part of Packaging Line . . . Speeds adjustable from 35 to 150 units/min; eliminates need for operator . . . 80

★ Disintegrating . . . recycling  
★ Portable Drums ala flattening heads

That's Inter  
Editorial Av  
interesting

Guest Edit  
New Soluti  
"installati  
better"

Materials —  
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Briefs — 13  
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Ideas — 12  
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Distilleries and  
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Drugs, Cosmetic  
Pharmaceutica

Fertilizers

\* Disintegrator's Dual-type Discharge Eliminates Clogging . . . Also avoids loss of power due to excessive recycling ..... 98

\* Portable Tool Removes Heads from 10 to 55-gal Drums ala Can Opener . . . Bites into 20-gauge steel, flattening sharp edges; includes two extra cutter-heads ..... 102

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## Over 33,000 Circulation in Chemical Process Plants

Chemical & Allied Products	Food Products	Public Utilities, Consultants, Govt.
Bake Oven Products	Leather Tanning	Rubber Products
Composition Materials, Fiber, etc.	Lime & Cement	Soap and Cleaning Compounds
Distilleries and Breweries	Metallurgical, etc.	Stone, Clay & Glass Products
Drugs, Cosmetics & Pharmaceuticals	Paint & Varnish	... and allied Lines (Carbon, Glue, Oils, Tobacco, etc.)
Fertilizers	Paper and Pulp	
	Petroleum Refining and Products	
	Plastics, Cellulose, Rayon, etc.	

MARCH, 1950

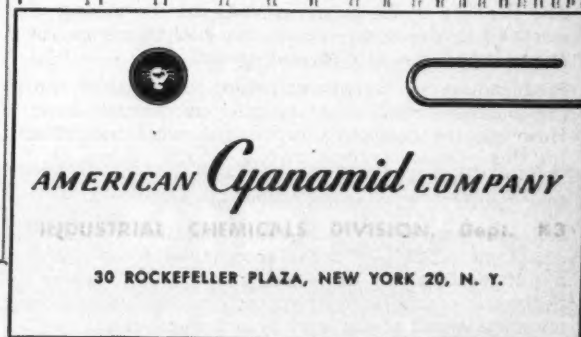
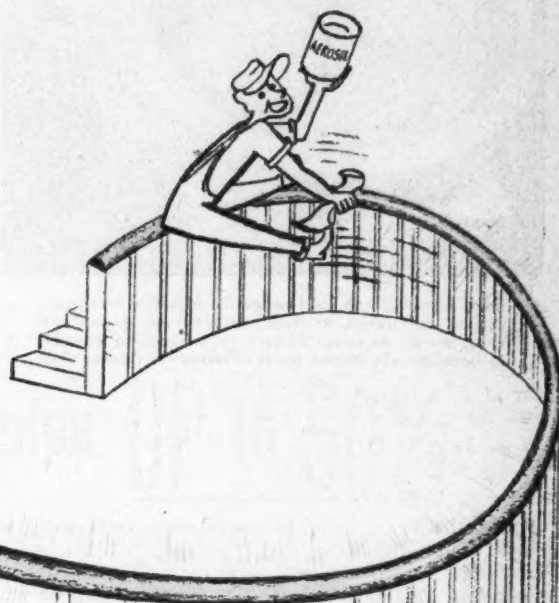
## Where can you profit by faster cleaning?

If speed of cleaning...in your processing operations or in your products...is important, you can probably profit by the use of

## AEROSOL\* WETTING AGENTS

AEROSOL Wetting Agents are the most powerful available. They save time and money in scores of applications where faster cleaning, spreading, penetrating, dispersing or rinsing is essential. They are recommended for many industrial purposes in connection with water, oils, surface coatings.

Write for descriptive booklet.



When inquiring check CP 6556 on handy form, pgs. 2-3



## Efficient Pre-blending of Ingredients Assures High-quality Vinyl Sheet



Inside of muller with hood removed. Assembly on bottom, holding the wheels, revolves. Wheels roll on material being mulled on sides. Note ports in revolving assembly to introduce air. Muller material leaves via door at right



**PROBLEM:** Prior to calendaring vinyl sheet at Yardley Industries Inc., Chicago, Ill., the resin, plasticizer, stabilizers and pigment were mixed and heated in a Banbury mixer. The sheet coming off the rolls did not meet expectations because the ingredients were not uniformly mixed.

In production mixing in the Banbury, the ingredients were often put into the mixer while it was still hot from a previous run. As a result, the mixture became semi-fluid before the ingredients were thoroughly dispersed. The Banbury is not primarily designed for mixing of materials in this form; hence, the discharge from the mixer lacked the desired uniformity.

Pre-blending the ingredients before putting them into the Banbury avoids the difficulty mentioned above. However, the company's experiences with equipment for this purpose (ribbon mixers, dough mixers, etc.) indicated that they would not give the uniform dispersion desired in a reasonable length of time.

**Solution:** Yardley has recently installed a piece of equipment called the Special Speedmullor for preblending of ingredients. The wheels of this muller are in a horizontal position, on a pivot arm, and are moved out toward side wall of the bowl by centrifugal force.

Plows and the action of centrifugal force hold the material in the shape of a doughnut around the side of the bowl, under the wheels. It is continuously turned over and mixed.

Muller mixes resin, stabilizers, plasticizer and pigment thoroughly to provide product of uniform color, desirable properties



Operator emptying powdered resin into skiphoist. All solid ingredients are put into muller by this method. Air blower, Dowtherm pump and Dowtherm coils are in foreground.

Powdered resin, pigment and solid stabilizers are put into skiphoist and charged to muller. Liquid plasticizer and liquid stabilizers (if these are used) are added through a funnel in side of hood of muller.

After mixing has proceeded for a number of seconds, air heated by Dowtherm coils is started blowing through unit. This brings the temperature to 200-250° F.

When mixing is complete, the discharge door is opened and the wheels push the material out. If desired, cool air may be blown through before discharging, to lower temperature of the mixture. Complete process is started

manually, but progresses automatically according to settings on a master control panel.

The hot mixture is heated further by other means before going to calender. If an extrusion compound was being made, this extra heating would be unneeded.

The Special Speedmullor has a batch size of 4 cu ft, equivalent to 150 to 200 lbs per batch. If 10 batches are produced per hour, this makes an hourly capacity of 1500 to 2000 lbs.

**Results:** Dispersion is much better than before. Another advantage is that the mixture is not held at high temperatures for as long a period as was the case when

Pushbutton starts skiphoist. Funnel in side of hood at upper right is for adding liquid ingredients. Shielded outlet of muller is below funnel





using the Banbury for mixing. This acts to improve the final sheet.

Since all ingredients are well-interspersed before the mixture becomes fluid, colors, stabilizers and plasticizers are not concentrated in any part of it. Hence, color of sheet is more uniform, and plasticizing and stabilizing action is equal in all parts of the material.

Producers of extruding powder have found that this process saves them 10 to 15 and more cents per pound of powder processed, as compared to the usual price of vinyl granules. Properties of the extruded product are also reported to be improved.

**Source:** The Special Speedmullor is a product of Beardsley & Piper Division, Pettibone Mulliken Corporation, Dept. CP, 2424 N. Cicero Ave., Chicago 39, Ill. . . or for more information check CP 6557 on handy form, pages 2 and 3.

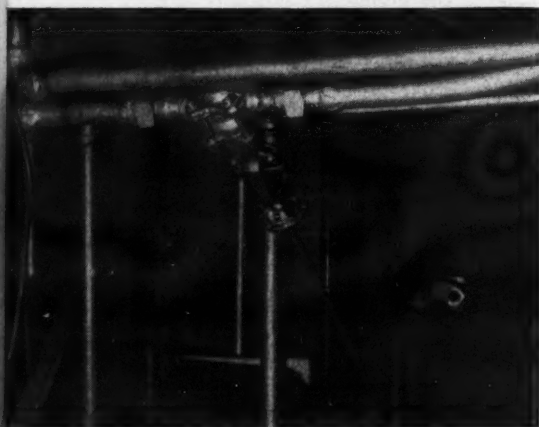
### 20 months of throttling acid leave gate valve unaffected . . .

stainless steel unit is in contact with 50% phosphoric acid 24 hours a day

**Problem:** Plug gate valves, used in throttling flow of 50% phosphoric acid to maintain water solution at pH of 2, had to be replaced frequently in the pharmaceutical plant of Schenley Laboratories, Inc., at Lawrenceburg, Ind.

Valves were sought which would resist wear and corrosion encountered in throttling acid to rate of  $\frac{1}{2}$  gpm for 8 hours per day and holding motionless acid the other 16 hours.

**Solution:** Three-quarter inch Type 316 18-8 Mo stainless gate valve is now used to throttle the acid. As shown in photo, valve is installed with stem 45



Throttles phosphoric acid without wear, etching

degrees below horizontal. Ends have screwed and welded connections, and valve has improvised extension stem for regulation of flow from instrument panel.

**Results:** Although frequently repacked, as are all acid-service valves in this plant, the valve shows no wear or damage from etching after 20 months service. Operators report that valve has given greater accuracy in regulation than previous units.

**Source:** Valve No. 18850 is made by Crane Co., Dept. CP, 836 So. Michigan Ave., Chicago, Ill. . . or for more information check CP 6558 on handy form, pages 2 and 3.



## CUT YOUR BILLS

# for corrosion-resistant pipe UP to 50%



### FREE BOOKLET...

gives you the complete story on Alcoa Aluminum Pipe—physical and mechanical properties; lists products for which it may be used. Write today.

For Alcoa Aluminum Pipe and other Alcoa Products, Consult your Classified Telephone Directory under the heading "Aluminum".

You can save up to fifty per cent on corrosion-resistant pipe when you specify Alcoa Aluminum 63S Pipe. Highly resistant to attack by sulfur compounds—safely carries many chemicals, petroleum products, foods, commodities. The products won't hurt the pipe, and the pipe won't hurt the products.

Alcoa Pipe costs far less per foot than other corrosion-resistant metal pipe. Goes in faster, too, because it weighs only one-third as much as other metal pipe. Can be easily joined by familiar methods and with standard fittings and flanges available from several nationally known manufacturers.

Alcoa Aluminum Pipe is seamless and is available in  $\frac{1}{8}$ " to 12" standard pipe sizes. For your nearest supplier, phone your local Alcoa sales office (branches in 55 cities) or write ALUMINUM COMPANY OF AMERICA, 1977C Gulf Building, Pittsburgh 19, Pennsylvania.

# ALCOA

# PIPE



INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT-MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS • ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

When inquiring check CP 6559 on handy form, pgs. 2-3

# PIPE VISE

*plus... a handy  
work  
bench*



Trays available  
for your old  
model Tristand.

"With this  
**RIDGID Tristand**  
I've got a good  
workbench  
anywhere I need it."

## RIDGID Tristand's tray keeps all your tools in easy reach

● No stooping, less fatigue and speedier work now that you don't have to bend over every time you change tools. New tray attaches in a jiffy, makes Tristand rigid so it can't fold up in use. Legs have rubber feet to prevent creeping. **RIDGID's** LongGrip tool-steel jaws won't slip, won't mar polished pipe and tubing. Yoke vise, 2½" capacity; chain vise, 4". Buy new work-saver **RIDGID** Tristands from your Supply House.

**RIDGID**  
WORK-SAVER PIPE TOOLS

THE RIDGE TOOL CO. • ELYRIA, OHIO

When inquiring check CP 6560 on handy form, pgs. 2-3

*New Solutions*  
OF PROCESSING PROBLEMS

## Viscose Processing Aided by Continous Record of Corrosive Spin Bath's Specific Gravity

Engineers use air-bubble method in providing smooth  
chart record; can be adapted for control

**PROBLEM:** The corrosive nature of a viscose spinning bath was one of the main difficulties that confronted engineers of the Celanese Corp. of America as they sought a method for assuring that specific gravity of bath would always be kept between 1.2-1.4.

Specific gravity of the bath, at the Rome, Ga., plant of Celanese, is an indication of strength and it was obvious that a continuous measuring and recording system would be most desirable. However, such a system would have to withstand the corrosive effects of the bath liquors, be reasonably accurate and give a smooth record.

**Solution:** After considerable investigation of available measuring devices, Celanese engineers developed the method illustrated. Primary measuring elements are two ¾" OD Pyrex gauge-glass dip tubes, each extending to a different level in the measuring chamber. This chamber is an 18" length of 4" ID Pyrex tubing sealed into head and bottom sections of lead by special Corning ASME flanges. Bath liquors are continuously recirculated through it.

A constant flow of air is purged into bath liquid in measuring chamber. Air flow is set by needle valves and indicated by rotameters in the air lines. The flow in each tube is set to be equal. Hence, pressure differential existing between the tubes will be a function of (a) difference in depths of immersion of the tubes, and (b) specific gravity of the liquid being measured.

Since the difference in immersion depths is held constant, any variation in pressure differential is caused by changes in specific gravity. This differential is measured by a bell type electric meter which transmits electrically to a recording instrument by means of an inductance bridge circuit. Since the range of the meter is 2.536" water, means of suppression is necessary to provide a differential pressure range equivalent to 2.536" water when the specific gravity changes between its limits of 1.2 and 1.4. This is accomplished by bubbling the air to the higher-level dip tube through a reference liquid first. This liquid has a constant specific gravity and is maintained at a definite height in reference pot.

The height of the reference liquid is held at a point where the pressure in the reference pot equals the pressure differential in the measuring pot when the specific gravity of the liquid being measured is 1.2. Hence, the

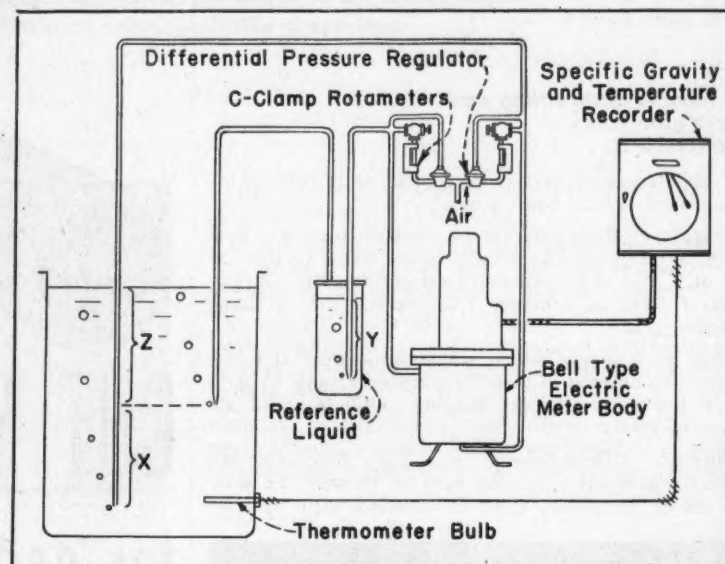
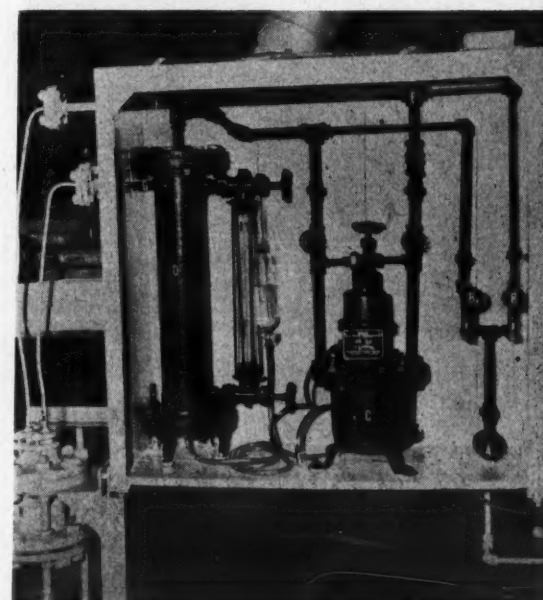


Diagram of equipment setup used for continuously recording specific gravity of viscose spin bath



Photograph of equipment. Component parts can be identified by comparing with diagram



meter reads zero at this point, and reads its maximum — 2.536" at 1.4 sg. gr.

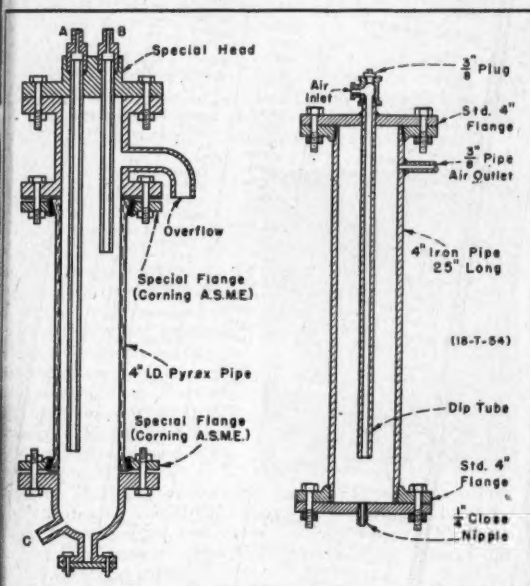
A thermometer bulb in measuring chamber is shown as being connected to a second pen on recorder. Actually, the Rome installation uses a separate temperature recorder. By keeping a record of temperature along with specific gravity, it is possible to correct the gravity measurements to any temperature, if so desired.

Measuring pot has a specially designed plenum chamber in bottom section for a steady inflow of spin bath solution without agitation or whirlpool effects. This aids in obtaining a very smooth chart record. The bath liquid enters chamber, flows through measuring pot continuously, and leaves through lead overflow funnel and piping.

Reference pot is a 25" length of 4" iron pipe with a pair of standard 4" flanges. Dip tube is 3/8" pipe that extends through upper flange down to a point about 3" from bottom flange which is tapped and supplied with 1" nipple. Top of pipe has a tee for admission of purge air. One end of tee, kept plugged during operation, is used as cleanout port.

Flexible tubing and a leveling bulb, connected to nipple in bottom flange of reference pot, facilitate maintenance of correct level of reference liquid within pot.

All components are mounted in cabinets behind locked



Measuring pot at left. Spin bath liquors are continuously recirculated through it. On the right is a drawing of reference pot which contains specified depth of constant-specific-gravity liquid. It acts as a suppressor to keep differential pressure between two dip tubes in measuring pot within range of bell meter

doors to protect them from fumes, splashes, and tampering by unauthorized personnel. Doors were removed when photograph was taken.

**Results:** The care and time taken in designing and installing the equipment are justified by highly satisfactory results. After installation and proper setting of air to dip tubes, there was found to be little need for any other than routine instrument maintenance.

Every week it is necessary to dissolve a solid crystalline deposit that slowly forms in dip tubes of measuring pot, due to spray thrown upon inner walls of tubes as bubbles

(Continued on next page)

VESSEL DIVISION

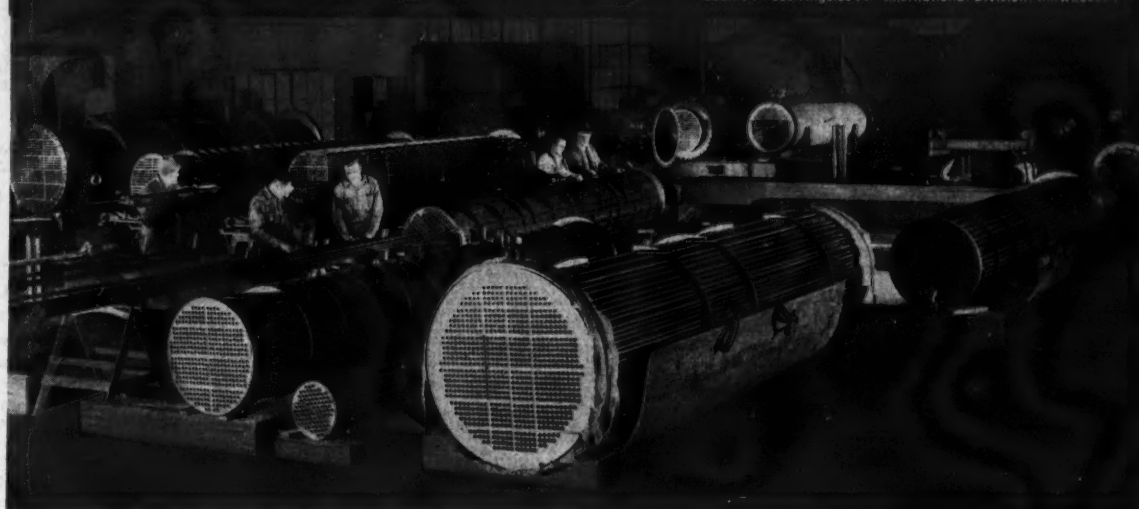
# NEWS



## A.O. Smith

CORPORATION

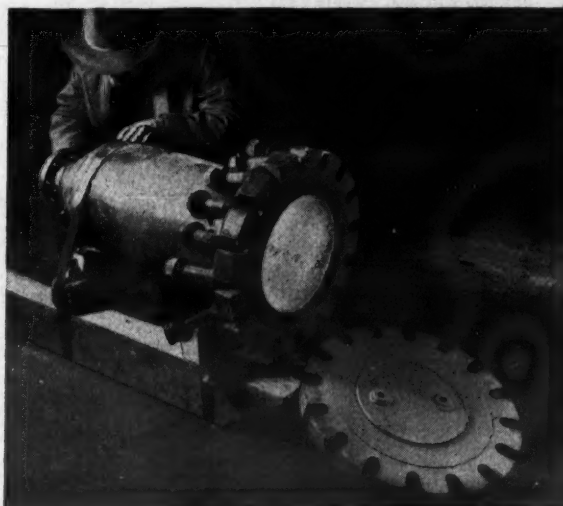
New York 17 • Boston 16 • Philadelphia 3 • Pittsburgh 19 • Chicago 4  
Washington 6, D. C. • Atlanta 3 • Tulsa 3 • Dallas 1 • Houston 2  
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### NO JOB IS TOO BIG — OR TOO SMALL.

Heat exchangers for every service—large or small, hot or cold, high or low pressures—are engineered and built by A.O. Smith. Customers benefit from accumulated years of A.O. Smith experience in the use of a wide variety of materials.

**NO PIG-IN-A-POKE HERE.** The customer and A.O. Smith collaborated in the building of this SMITHway alloy-lined experimental pilot unit so that the alloy lining, selected by laboratory tests for corrosion service, could be subjected to process test-runs before the full-size production units were manufactured.



**SAFEGUARDING THE CUSTOMER'S INVESTMENT.** After the selection of the alloy lining, A.O. Smith makes doubly sure that it conforms to specifications, and does not contain any undesirable residual elements, by spectro-chemically analyzing sample coupons of the lining before releasing it for manufacture into the vessel.

A. O. Smith Corporation, Dept. CP-350  
Milwaukee 1, Wisconsin

Without obligation, send us the latest A. O. Smith Vessel Bulletin:

- ☐ V-46: Alloy, Alloy-lined, Clad and Glass-lined Vessels
- ☐ V-44: Field Assembly of Pressure Vessels
- ☐ V-52: Multi-Layer Manufacture and Assembly

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When inquiring check CP 6561 on handy form, pgs. 2-3



## NEW SOLUTIONS of processing problems

(Continued from preceding page)

form and break. This is done by shutting off purge air for about five minutes, and allowing the bath solution to rise in tube and dissolve the solid. Error is introduced if the solid is allowed to build up for 10 days or more.

The specific gravity recorder can also be used as an automatic controller. When equipped with an internally mounted pneumatic control unit, the instrument automatically adds makeup solution to the continuously circulated spin bath whenever the measured specific gravity falls below the value established by controller setting.

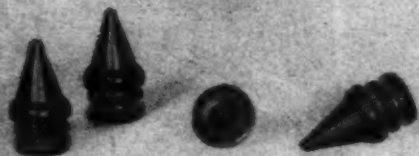
**Source:** Recorders used in this installation are made by Brown Instruments Division, Minneapolis-Honeywell Regulator Company, Dept. CP, Wayne and Roberts Aves., Philadelphia 44, Pa. . . or for more information check CP 6562 on handy form, pages 2 and 3.

### Improved plasticity in molding eliminates rejects of intricate rubber parts . . .

polymer, added directly to base formula, does not affect hardness or other properties adversely

**Problem:** Percentage of rejections was high when molding a small, intricately shaped part of a graphite dispenser made from reclaim rubber stock at Joseph Dixon Crucible Co., Jersey City, N. J. It appeared that it would be necessary to modify the formula and operations radically to obtain the necessary plasticity for production of a satisfactory part.

It was imperative to maintain the Durometer hardness of the part while getting better flow in mold.



Intricately shaped part of graphite dispenser being molded

**Solution:** Various products were tested in the molding composition, and it was found that, in general, those which gave the desired plasticity reduced the finished hardness too much. However, after further exploration, a synthetic hydrocarbon resin, Kenflex A, was found to give the proper plasticity without lowering hardness or affecting other properties of finished part. Three parts Kenflex A per 100 parts rubber hydrocarbon are added to the base formula.

Kenflex A is an amber-colored condensation polymer of alkyl naphthalenes, and is available in a range of melting points. It has good electrical characteristics and a wide range of compatibility with other synthetic polymers such as polyvinyl chloride, thiokol, polystyrene, polyethylene, nitrile rubber, etc.

Unique solvent power and very low viscosity index have led to application wherever maximum flow during fabrication and minimum effect on hardness and physicals of finished object are desirable.

# CORROSION

## CHEMICAL RESISTANCE OF "KARBATE" PRODUCTS

The satisfactory use of "Karbate" brand impervious graphite is not limited to the chemical reagents, concentrations or fluid temperatures shown in this table.

Chemical Reagent	Concentration up to	Fluid Temperature up to	Recommendation	Grade	Comment
<b>ACIDS</b>					
Acetic acid	All	Boiling	22	14	
Acetic anhydride	All	Boiling	22	14	
Arsenic acid	Saturated	Boiling	22	14	
Boric acid	Saturated	200°F	21	14	
Carbonic trioxide, aq. soln.	10%	Room	(21)	14	
Chromic trioxide, aq. soln.	40%	Boiling	22	14	
Chromium trioxide, aq. soln.	All	Boiling	22	14	
Citric acid	All	Boiling	22	14	
Formic acid	All	Boiling	22	14	
Hydrobromic acid	48%	Boiling	22	14	
Hydrochloric acid	48-60%	185°F	x	14	
Hydrofluoric acid	Over 60%	Boiling	22	14	
Hydrofluoric acid	Saturated	Boiling	21	14	
Hydrogen sulphide-water	All	185°F	21	(1)	
Lactic acid	10%	140°F	x	x	
Nitric acid	Over 40%	Boiling	22	14	
Nitric acid	All	Boiling	22	14	
Oleic acid	85%	Boiling	21	14	
Oxalic acid	All	Boiling	22	(1)	
Phosphoric acid	75%	340°F	x	14	
Stearic acid	75-96%	Boiling	22	14	
Sulphuric acid	Over 96%	Boiling	22	14	
Sulphuric acid	All	Boiling	21	15	
Tartaric acid	All	Boiling	21	15	
<b>ALKALIES</b>					
Ammonium hydroxide	All	Boiling	22	14	
Monoethanolamine	67%	Boiling	21	15	
Sodium hydroxide	67-80%	275°F	21	8*	
Tetramine C	All	Boiling	21	8*	
<b>SALT SOLUTIONS</b>					
Ammonium thiocyanide	All	Boiling	22	14	
Arsenic trichloride	All	Boiling	22	14	
Capric chloride	All	Boiling	22	14	
Ferric chloride	All	Boiling	22	14	
Ferrous sulphate	All	Boiling	22	14	
Manganous sulphate	All	Boiling	22	14	
Nickel chloride	100%	Boiling	22	14	
Nickel sulphate	All	Boiling	21	8	
Phosphoric trichloride	25%	Boiling	22	14	
Sodium hypochlorite	All	Boiling	22	14	
Sodium chloride	All	Boiling	22	14	
Sodium ammonium chloride	27%	Boiling	22	14	
Zinc chloride	27%	Boiling	22	14	
Zinc sulphate	340°F	22	14	x	
<b>HALOGENS, AIR, WATER</b>					
Air	100%	Room	22	14	
Bromine	Saturated	Room	22	14	
Bromine water	100%	Room	21	x	
Chlorine-dry	Saturated	Room	21	x	
Chlorine water	100%	Room	x	x	
Iodine	100%	Room	x	x	
Fluorine	100%	Room	x	x	
<b>HALOGENS, AIR, WATER cont.</b>					
Steam	100%	340°F Boiling	22	14	
Water	100%	Boiling	22	14	
<b>ORGANIC COMPOUNDS</b>					
Acetone	100%	Boiling	22	14	
Amyl alcohol	100%	Boiling	22	14	
Aniline	100%	Boiling	22	14	
Benzene	100%	Boiling	22	14	
Butyl alcohol	100%	Boiling	22	14	
Butyl "Cellasolve"	100%	Boiling	21	8*	
Carbon tetrachloride	100%	257°F	22	14	
"Cellasolve"	100%	340°F	22	14	
Chloroethylbenzene	100%	Boiling	22	14	
Chloroform	100%	Boiling	22	14	
Dawtherm	93%	Boiling	22	14	
Dioxan	100%	Boiling	22	14	
Ethyl alcohol	Saturated	Room	22	14	
Ethylene dichloride	100%	Boiling	21	14	
Ethyl mercaptan-water	100%	340°F	22	14	
Freon 11 and 12	85%	257°F	22	14	
Gasoline	85%	Boiling	22	14	
Glycerine hydrate	100%	Boiling	22	14	
Hydrazine hydrate	100%	Boiling	22	14	
Isopropyl acetate	100%	Boiling	22	14	
Isopropyl alcohol	100%	Boiling	22	14	
Kerosene	100%	Boiling	22	14	
Mannitol	100%	Boiling	22	14	
Methyl isobutyl ketone	100%	Boiling	22	14	
Methyl alcohol	100%	Boiling	22	14	
Monochlorobenzene	100%	Boiling	22	14	
Octyl alcohol	100%	Boiling	22	14	
Paradichlorobenzene	100%	Boiling	22	14	
Paraldehyde	100%	Boiling	22	14	
Tetrachlorethane, sym.	100%	Boiling	22	14	
Trichlorethylene	100%	Boiling	22	14	
<b>MIXTURES</b>					
Ammonium persulfate plus sulfuric acid	25%	Room	21	14	
Chlorinated ethyl alcohols	20%	Boiling	22	8*	
Chromic plating soln.	All	Boiling	22	14	
Hydrochloric acid saturated with chlorine	20%	Boiling	21	14	
Levulinic acid plus angelica lactone	—	Boiling	22	14	
Nickel plating soln. (chloride)	All	Boiling	22	14	
Nickel plating soln. (sulfate)	13%	200°F	21	(1)	
Nitric acid plus sulfuric acid	3%	Boiling	22	14	
Hydrofluoric acid	All	Boiling	21	8	
Parkerizing solution	25%	Boiling	22	14	
Rayon Spin bath	—	Room	22	14	
Sodium hypochlorite plus sodium hydroxide	—	Boiling	x	x	
Sulfuric acid saturated with sulfur dioxide	—	Boiling	x	x	
Thionyl chloride plus hydrochloric acid	96%	Room	x	x	
Sulfuric acid plus nitric acid	.03%	Room	x	x	

NOTES: (1) "National" No. 14 Cement used with threaded joints will give serviceable life of at least six months.

\* For field assembly Not recommended.

"National" No. 15 Cement is recommended.

# and what to do about it—

Install carbon, graphite and "Karbate" impervious graphite equipment for storage, conveying, and processing of corrosive fluids

## HEAT EXCHANGERS—

"Karbate" impervious graphite heat exchanger types include: shell and tube, cascade, plate, bayonet and concentric. Available in standard sizes or tailored to your specifications. Provide

excellent heat transfer. Resist acids and alkalis, immune to thermal shock, stand strain and vibration, light in weight, easy to install. Write for Catalog Section M-8808-A, describing Shell and Tube types; M-8804 and M-8809, describing Plate type and bayonet type; and M-8807-C, describing the Cascade type.

## PIPE AND FITTINGS—

"Karbate" impervious graphite pipe and fittings in a complete size range include: elbows, crosses, couplings, caps, plugs, nozzles, flanges, and discs, collars, slotted couplers, flexible couplings. Advantages: top corrosion resistance, immune to thermal shock, light weight, free from erosion scale, good machinability, strong and not subject to fatigue. Write for Catalog

Section M-8800B for ordering details on sizes, dimensions, and prices. Catalog Section M-8801-A, the Installation Manual, tells you how to cut, serrate, cement, thread and support "Karbate" pipe. Also Catalog Sections M-9100-A on "Karbate" pumps and M-8803-A on globe valves.

## TOWERS AND MISC. EQUIPMENT—

Towers made of "Karbate" impervious graphite provide low maintenance and long service life in absorption, fractionation, extraction, scrubbing and related processes. High structural strength, excellent resistance to corrosion and thermal shock, light weight. Bubble caps, trays and distributors made of carbon, graphite or "Karbate" impervious graphite for use in towers. Carbon Raschig rings for tower packing in a wide range of sizes. Write for Catalog Sections M-9600 and M-9601-A for information on HCl absorbers; M-9000-A for Raschig rings.

## BRICK AND BLOCKS—

"National" carbon and graphite brick and blocks come in a complete range of sizes and shapes for such jobs as linings for stainless steel pickling tanks, sulphate digesters, caustic scrubbing towers, starch hydrolysis equipment, phosphorus combustion chambers, phosphoric acid hydrators, sulphuric acid concentrators. Brick and blocks also used for blast furnace and run-out trough linings, where resistance to extreme heat and corrosion must be combined. All shapes are strong, immune to thermal shock, hold their shape at extremely high temperatures, are light in weight and easy to install. Write for Catalog Section M-8300-A for complete brick information.

## GROUND ANODES—



"National" Graphite, Na graphite and carbon ground anodes, used in connection with "National" BF-2 backfill material, will greatly increase the life of any buried metallic structure subject to soil and stray current corrosion. These anodes have been in service since 1924 and are tried and proved. Anodes are used to protect pipe lines, oil well casings, water mains, gas mains, refinery equipment, tank farms, underground cables, hot water tanks, chemical tanks, underwater structures, power plant equipment, barges, cooling tanks and coils, structural footings and many other similar items. Write for Catalog Sections M-8500-A.

## Advantages of "Karbate" Impervious Graphite

- Resists the action of acids, alkalis and other chemicals
- High thermal conductivity
- Resistant to mechanical shock
- Immune to thermal shock
- Easy to machine and install
- Light in weight

The terms "Karbate", "National" and "Karbate" are registered trade-marks of  
**NATIONAL CARBON DIVISION**  
UNION CARBIDE AND CARBON CORPORATION  
30 East 42nd Street  
New York 17, N. Y.  
DISTRICT SALES OFFICES:  
Atlanta, Chicago, Dallas,  
Kansas City, New York,  
Pittsburgh, San Francisco

## NEW SOLUTIONS of processing problems

**Results:** Simple addition of material to original base formula being molded has eliminated rejects. The resulting rubber parts are performing well.

**Source:** Manufactured by Kenrich Corporation, Dept. CP, 120 Wall St., New York 5, N. Y. . . . or for more information check CP 6564 on handy form, pages 2 and 3.

## Stainless piston rod's life increased 5 times by hardening . . .

treating 18-8 stainless steel yields a very hard case retaining most of its stainless qualities

**Problem:** An 18-8 stainless steel piston rod on an aqua ammonia pump in a leading packing plant had a life of only 180 days before replacement was required.

**Solution:** Stainless steel piston rod replacement was hardened by the Super Scottsonizing method.

Super Scottsonizing is especially suitable for hardening finished stainless steel parts which have been machined



18-8 stainless piston rod of aqua ammonia pump has longer life after hardening

to close tolerances. It gives a case of 3 to 5 thousandths which is extremely hard (Rockwell 68-70 C). Case gives good wear, prevents galling, and retains most of its stainless qualities.

**Results:** Piston rod hardened by this method remained in continuous satisfactory operation for 1145 days (over 3 years) — an increase in life over the untreated rod of more than 5 times.

**Source:** Further information on hardening of stainless steels is available from C. U. Scott & Son, Inc., Dept. CP, Rock Island, Ill. . . . or for more information check CP 6565 on handy form, pages 2 and 3.

## Controls volume of flow under varying pressure

Compact regulator that maintains a constant volume of fluid flow under varying pressure conditions is illustrated and described in 3-page, 2-color folder. Standard designs are available for control of flows up to 100 gpm. Folder includes diagram with integral parts named; covers operation, installation, capacities, and servicing.

"Kates Regulator", issued by the W. A. Kates Co., Dept. CP, 430 Waukegan Rd., Deerfield, Ill. When inquiring specify CP 6566 on handy form, pages 2 and 3.

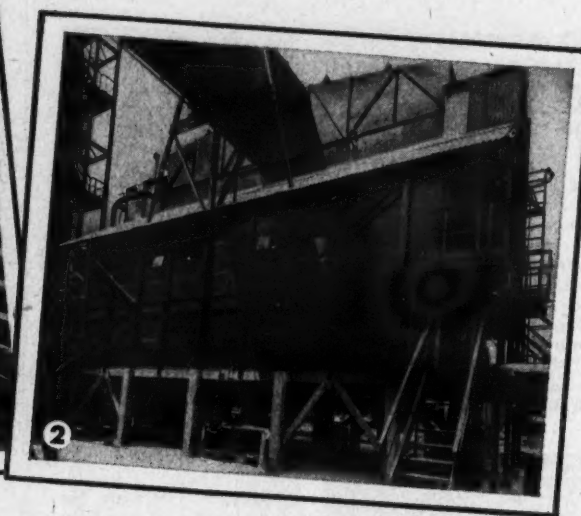
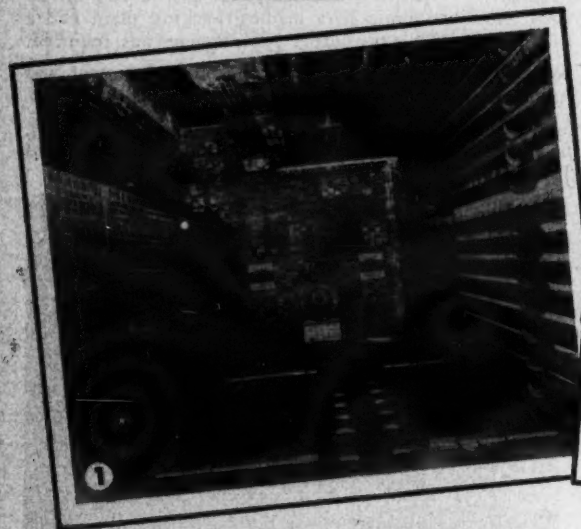
WRITE FOR COMPLETE INFORMATION AS OFFERED ABOVE!

When inquiring check CP 6563 on handy form, pgs. 2-3



4

# Sure Ways to Save Money in PROCESS FURNACES



In process furnace operation, every dollar counts. That's why leading manufacturers of chemical and petroleum process furnaces save their customers money *four ways* by using B&W Insulating Firebrick. These durable, lightweight brick . . .

**1 CUT INSTALLATION COSTS** — B&W Insulating Firebrick are easy to install. They can be cut, drilled or shaped on the job with ordinary woodworking tools. Their lightness makes them easy to handle.

**2 ELIMINATE EXPENSIVE ALLOYS** — Because of their high insulating values, B&W Insulating Firebrick can be supported with ordinary carbon steel hangers. Expensive, heat-resisting alloys are not necessary.

**3 REDUCE DOWN-TIME** — These brick have low heat storage, cool off quickly. This makes possible quick access to the furnace for inspection. They heat up quickly to get back on the line, too.

**4 LAST FOR YEARS** — In thousands of installations, B&W Insulating Firebrick have proved their staying power. Process furnace operators know these brick offer long, maintenance-free service.

You, too, can profit by this four-way economy of B&W Insulating Firebrick. Ask your B&W representative for all the facts on these cost-cutting refractories. He'll be glad to discuss your refractory problems with you.

- ① Interior of The M. W. Kellogg Co. Feed Preheater Furnace lined with B&W K-26 IFB.
- ② Exterior view of Feed Preheater Furnace.



## NEW SOLUTIONS of processing problems

### Mechanical-foam system provides economical means of controlling inflammable-liquid fires . . .

automatic method sprays 7" foam layer in less than 3½ min; clean-up is easy

**Problem:** Schenectady Varnish Company, Schenectady, N. Y., had a fire-protection problem. Officials of the company realized the necessity of installing a system to control and isolate possible spill fires of flammable liquids, some of which are as light as naphtha and benzol, in unloading and storage area.

Contents of tank cars are emptied into the storage tanks which stand along a 25- to 40-ft. wide railroad spur. The 450-ft-long area is practically inaccessible to city fire department operations.

Factory Insurance Association, after a preliminary study, decided that protection system should be (a) automatic for maximum safety, (b) establish immediate protection



Aer-O-Foam storage tank and injection pump

over area involved in fire, and (c) eliminate possibility of flashback of fire for several hours. The study also revealed that standard methods of protection, or relocation of area, would not be feasible from a production or economic point of view.

**Solution:** System installed uses a mechanically formed foam as the extinguishing blanket. The foam-former is a stable hydrolized protein manufactured from a soya-bean base, and is known as Aer-O-Foam liquid. When about 6% by volume of liquid is mixed with water and aerated, a homogenous foam blanket forms, capable of flowing around obstacles and putting out fires involving flammable materials.

Area is divided into 3 parts, protection for each area being regulated by one 6" Suprotex-Deluge valve. Each valve is actuated pneumatically by pressure impulse from pneumatic heat detectors located strategically throughout area protected by each system. Each piping system is galvanized and is equipped with 16 or 17 overhead foam-aerating and discharging devices. Discharge pressure is about 75 psi, giving total foam discharge of about 8800 gpm per system. Alarm gongs, supervisory features and other devices are included in each system.

Foam storage and injection system consists of a small injection pump attached to double-compartmented 800-

For more information on product at right, specify CP 6568 . . . see information request blank between pages 2-3.

Sales Offices: Alliance, Ohio • Beaver Falls, Pa. • Boston 15, Mass. • Chicago 3, Ill. • Cleveland 14, Ohio • Denver 2, Colorado • Detroit 26, Mich. • Houston 2, Texas • Los Angeles 15, Calif. • New York 16, N. Y. • Philadelphia 2, Pa. • St. Louis 1, Mo. • San Francisco 3, Calif. • Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla. • Vancouver, British Columbia

When inquiring check CP 6567 on handy form, pgs. 2-3

CHEMICAL PROCESSING



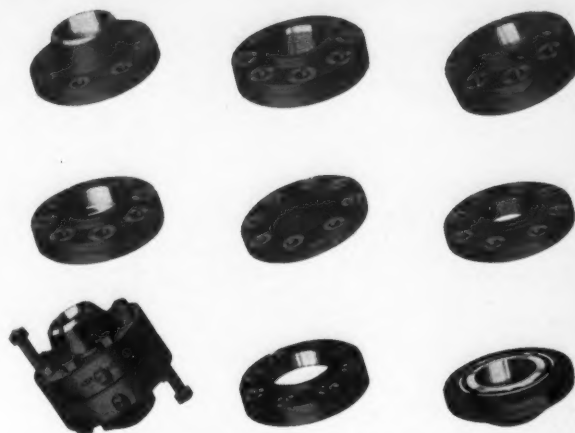


### SEAMLESS WELDING FITTINGS

1/2-inch through 36 inches  
Standard through Double Extra Strong

### FORGED STEEL FITTINGS

Screwed and Socket Welding  
1/8-inch through 4 inches  
2000 lbs. through 6000 lbs. pressure



### FORGED STEEL FLANGES

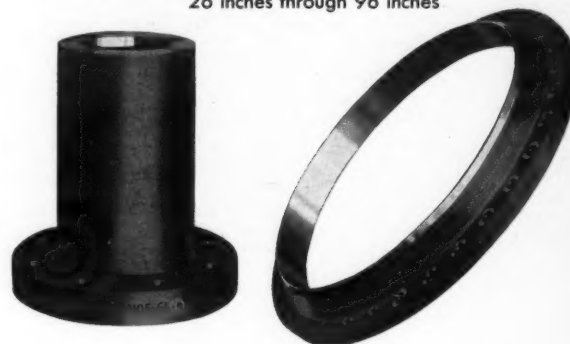
1/2-inch through 30 inches  
150 lbs. through 2500 lbs. pressure

### LONG WELDING NECKS

1-inch through 24 inches

### LARGE O.D. FLANGES

26 inches through 96 inches



TO MARK PROGRESS

# Ladish...one place to get them all

*Available in*  
**CARBON  
ALLOY  
STAINLESS STEELS  
ALUMINUM  
COPPER  
and OTHER  
NON-FERROUS  
METALS**

Whatever the piping job...Ladish is prepared to supply your fittings needs. Here is the one line that offers them all...Seamless Welding Fittings, Forged Steel Flanges, Forged Steel Fittings, Large O.D. Flanges and Long Welding Necks...in an unrestricted selection of types, sizes, weights, pressure ratings and materials. Standardizing on this complete line not only simplifies procurement but also assures you of added dependability by protecting every joint of the system through use of Ladish Con-

A COMPLETE LINE PRODUCED UNDER ONE ROOF  
...ONE RESPONSIBILITY

## LADISH CO.

CUDAHY, WISCONSIN  
MILWAUKEE SUBURB

DISTRICT OFFICES: New York • Buffalo • Pittsburgh • Philadelphia • Cleveland  
Chicago • St. Paul • St. Louis • Atlanta • Houston • Los Angeles

**DRY...**  
**COOL...**  
**PROCESS...**

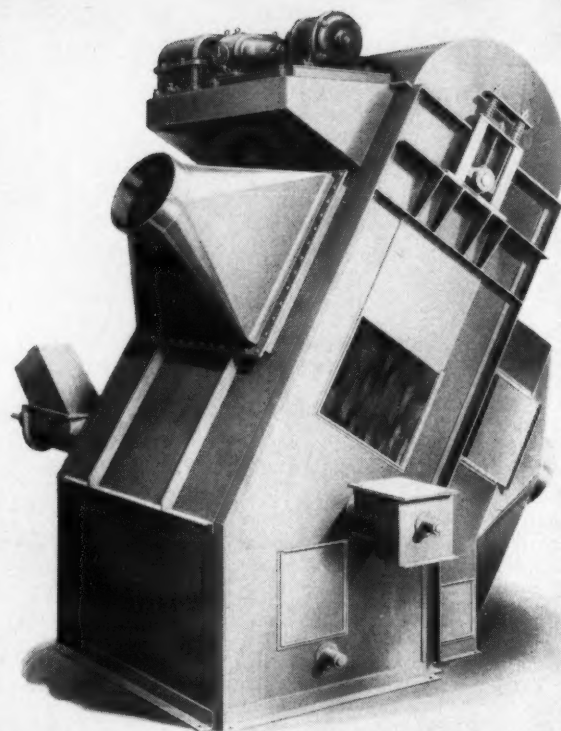
With **ONE** LINK-BELT MULTI-LOUVRE UNIT

\* See your own material dried in the Link-Belt Laboratory. A test run on your product can be arranged at your convenience.

The Link-Belt Multi-Louvre is a flexible unit which may be used to dry, cool and process material from the time it enters the unit until it is discharged. A cooling section on the discharge side of the unit permits temperature control between the hot drying gases and the ambient temperature of the incoming air. The unit can also be arranged so that the product may be treated with steam or other gases which may be required in the processing while the drying operation is going on.

Special applications can be made for materials which require a series of temperature treatments in different zones.

You are invited to discuss your particular drying problems with a Link-Belt Engineer. His advice is yours without obligation.



MAY WE SEND YOU LINK-BELT DRYER BOOKS Nos. 1911-A AND 2209?



**LINK-BELT COMPANY**  
 Chicago 9, Indianapolis 6, Philadelphia 40,  
 Atlanta, Dallas 1, Minneapolis 5,  
 San Francisco 24, Los Angeles 33, Seattle 4,  
 Toronto 8. Offices in Principal Cities.

11,052

When inquiring check CP 6569 on handy form, pgs. 2-3



gal storage tank. One side of tank is always open to pump; other side is held in reserve until needed. Pump, when started by operation of 6" Suprotex-Deluge valve, discharges foam liquid into piping system for distribution to the 3 outside systems and to 9 portable hose stations inside plant.

Metering of foam liquid into water piping system is accomplished by means of orifices which are controlled by small companion valves operated pneumatically by 6" Suprotex-Deluge valves. A 50-gal cushion tank will supply several minutes of foam operation to portable units before foam liquid pump cuts in.

This type of distribution system can be extended to include additional hose stations or area-protection systems by extending piping and installing proper-size orifice between distribution piping and new system.

Foam discharge rate from systems is about 2" of depth per minute. More than 7½-min. supply of foam liquid is available from each section of storage tank. Besides the standard Aer-O-Foam nozzles at each portable hose station, special goose-neck applicators are provided for use on any fire which might occur in the vertical storage tanks.

**Results:** A full-scale test was conducted on one of the protection systems. Within 20 seconds after applying heat testing pan to one of the detectors, foam was being discharged from deflectors of system at full efficiency. System was allowed to operate for about 3-3/10 minutes, during which time 190 gals of foam liquid were used and a foam blanket of about 7" was laid above bed of spur track.

Water was discharged from system on blanket, and no serious dissipation of blanket was apparent. It was discovered that water, properly applied, may be useful in reducing volume of foam required to put out fire. Although adequate portable mop-up equipment had been provided, it was found that removal of foam blanket was easier than anticipated. The foam dehydrated within a few hours and actually dissipated itself. Cost estimates show that system is comparatively economical. Use of mechanical foam in this manner makes possible engineering economies in fire-protection design of water supplies, drainage, etc.

**Source:** Installed by "Automatic" Sprinkler Corporation of America, Dept. CP, Youngstown 1, Ohio . . . or for more information check CP 6570 on handy form, pages 2 and 3.

#### Covers operation of many liquid level instruments

Instruments for indicating, recording and controlling liquid level and interface level are illustrated and discussed in a 24-page catalog on liquid level measurement. How variations in liquid level in weirs and flumes are utilized for measurement and control of large flow rates is also explained.

Drawings are used to explain the operation of magnetic tape and drum, electronically transmitting, ball-float, differential pressure and pneumatic units, as well as V-notch weir and Parshall flume flowmeter instruments and chemical service sight gauge glasses. Specific recommendations are made for conditions involving corrosive service, high temperatures and pressures, and travel up to 25 feet.

Catalog 75 is issued by the Fischer & Porter Company, Dept. CP, 75 County Line Road, Hatboro, Pennsylvania. When inquiring, specify CP 6571 on handy form, pages 2 and 3.



# MAGNETIC AGE

Issued periodically in Erie, Pennsylvania, by the Eriez Manufacturing Company, Producers of Magnetic Equipment

## 1950 Eriez Magnetic Pulleys up to 50% Stronger

### PHILIP MORRIS PRODUCT PURITY GUARDED BY ERIEZ MAGNETS

Philip Morris & Co., Ltd., Inc., spares no expense to be sure that its increasingly popular cigarette is delivered clean and perfect to the user.

A. C. Britton, General Manager of the Philip Morris factory at Richmond, says, "We



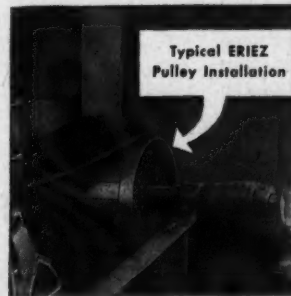
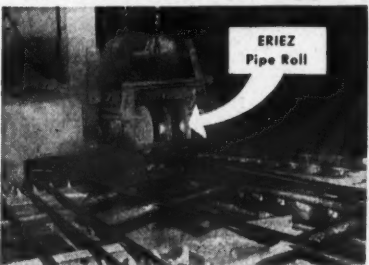
subject our tobacco and our cigarettes to three major tests for purity of material and perfection of product. First, the tobacco itself passes through an electronic metal detector to note the presence of metal, which is then removed by hand. Then, the finished cigarettes pass under a magnet which removes any iron contamination. Finally, the complete packages pass before a combination electrical-mechanical detector which discards any package containing an imperfect cigarette."

Philip Morris engineers working on the second phase of this protective procedure, tested as many as 16 different types of permanent magnets before the Eriez permanent magnet was determined best for the purpose. The special plate type magnet now in use operates on all cigarette-making machines. For more data on plate magnet applications, circle No. 4 in coupon and mail.

### STEEL COMPANY SAVES MONEY USING MAGNETIC PIPE ROLLS

Utilizing double drag-out Eriez permanent magnetic pipe rolls to convey pipe from hot galvanizing baths, Wheatland Tube Company, Wheatland, Pa., is realizing tremendous savings each year.

Eriez non-electric rolls move the pipe in a



Completely redesigned and vastly improved magnetic pulleys are now being offered by the Eriez Manufacturing Company for the effective separation of ferrous from non-ferrous material. These permanent non-electric separators are completely automatic in operation. They serve to remove tramp iron from materials being processed in the chemical, food, metalworking, textile, milling, ceramic, tobacco and many other industries.

The new 1950 Eriez pulleys are more rugged than ever . . . with absolutely uniform end-to-end flux distribution that means more dependable iron removal. Added to this, magnetic strengths have been increased up to 50% in some models.

Total weight of the pulleys has been reduced . . . structural strengths increased. The assembly has less dead metal and more useful magnet weight. Available in 12", 15", 18", 20" sizes. To learn more about the new Eriez line of pulleys, circle No. 1 in coupon and mail to Eriez.

### MAGNETS FOR WASTE MACHINES CUT TEXTILE FIRE HAZARD

In South Carolina recently, a nail went through a waste machine in a big mill. Result: FIRE - DAMAGE - DOLLARS LOST. The superintendent of the mill said the tramp



iron problem had to be solved. Eriez engineers did it, even though the matted texture of waste had brought failure in earlier attempts to remove metal magnetically.

The installation includes an Eriez 20" Jumbo plate magnet, one of the most powerful in the Eriez line of plate, hump and pulley magnets for textile mills. After demonstration of the separator's efficiency, seven additional installations were ordered for other mills.

For data on Eriez permanent magnetic separators for textile applications, circle No. 3 in coupon and mail.

double line up an inclined plane from the tank, allowing much more zinc than usual to drain back into the galvanizing bath. This, plus decreased maintenance and power consumption, saves thousands of dollars annually. Wheatland is greatly impressed with the magnetic rolls' operation and highly recommends their use.

Eriez pipe rolls are completely non-electric; burnouts and maintenance problems caused by high temperature, corrosive fumes and steam are minimized, resulting in greatest possible economies.

For more data on Eriez Pipe and Shape Rolls, circle number 5 on the coupon and mail.

### NEW CATALOG DESCRIBES ALL ERIEZ PRODUCTS

The complete line of Eriez non-electric magnetic separators and electronic metal detectors is fully described in a new 12-page, two-color catalog.

Included are plate type separators for gravity flow chutes, hoppers, and other stationary installations; magnetic humps for pneumatic lines and some gravity flow-drops; non-electric pulleys and drums for belt conveyor lines; magnetic pipeline traps for liquid flow applications; road and floor sweepers; piperolls; and an electronic detector for all metals.

Full specifications, photographs and engineering drawings accompany each piece of equipment. To obtain catalog, circle No. 2 on coupon and mail.

ERIEZ MANUFACTURING COMPANY  
201 State Street, Erie, Pa.

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

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Company Name \_\_\_\_\_

1 2 3 4 5

Get Eriez 8-Page Quarterly House Organ • Technical, Human Interest, Installation Stories • Request On Business Letterhead

When inquiring check CP 6572 on handy form, pgs. 2-3

## Polymerization of Versatile Intermediate Produces Materials of Various Forms, Characteristics

**USES:** Many uses are suggested for this resin-chemical intermediate solvent. As a solvent coupling agent, it solubilizes immiscible compounds, thus being suitable for many paints, varnishes, dyes and resins. It can be employed as a dispersing (wetting) agent for waxes, gums, metallic soaps, ceramic mixes; tar and asphalt; a penetrant for lumber treatment; and in flotation.

Polymers made from the material show possibilities for use in dark-colored printing inks, dyes, resins, plastics; formulations for rubber, bonding materials, coatings, leather black finishes, tars; impregnants for textiles, leather, paper and ceramics.

In addition to these applications, material functions as an intermediate for aromatics, disinfectants, preservatives, other compounds.

**Features:** Undergoes a large variety of reactions to produce products with wide range of properties and characteristics. The material itself is produced under uniform conditions from standard grades of raw material.

**Description:** Cetol is a blend of organic derivatives made from extracts of various vegetable materials. A pale, yellow-red aromatic liquid, it boils between 160 and 215°C, leaves no ash upon ignition, and weighs about 8.6 lbs per

**Blend of organic derivatives undergoes many types of reactions in making products useful in numerous fields**

gal. Flash point is approximately 150°F, and it solidifies below 0°F. Cetol contains a trace of moisture, has 4% solubility in water, but is soluble in most organic solvents.

The material can be hydrogenated, hydrated, sulfurized; reacts with  $H_2S$ , halogens and alcohols. Resinous materials are formed with maleic anhydride, phenols and urea. When catalyzed by mineral acids, acid-metallic chlorides or NaOH, material polymerizes to a red to black product which varies in form from a liquid to a hard solid, depending upon temperature, and type and concentration of catalyst used.

For instance, concentrated HCl immediately produces a black liquid that becomes a soft, rubbery solid in a few days.  $S_2Cl_2$ ,  $TiCl_4$ , etc., instantly produce a black viscous mass which hardens in a few hours. Concentrated phosphoric acid produces a red-purple liquid which hardens in a few days. NaOH produces a brown solid slowly.

Addition of phenols, vinyl acetate, cellulose acetate, lignin, cyclohexanol and other suitable compounds to the above polymerizations plasticize the final product, resulting in wider differences in characteristics of the final product. Cetol, lignin and concentrated HCl react to produce a soft black solid, insoluble in dilute acids and bases, and most organic solvents.

Textiles, paper, leather and ceramics may be impregnated with Cetol, and subsequently treated with catalyst to produce resins in situ. Cetol can also be polymerized and emulsified in situ.

Cetol may be sprayed simultaneously with a catalyst, forming resinous material as needed. This gives flexibility of operation.

**Source:** Product of Process Chemical Specialties, Dept. CP, P.O. Box 345, Beverly, Mass. . . . or for more information check CP 6573 on handy form, pages 2 and 3.

## Bearing Surfaces Heat Up Much Slower with Molybdenum Lubricant

**Stable material may be used alone or with oils or greases; prevents seizure and failure, even though oil is burned out**

**USES:** Lubrication of high-speed, high-temperature and high-pressure bearings and gears. When employed for lubricating deep-drawing dies, this lubricant eliminates hand-working of high-spots and prevents metal pull-out. Also eliminates run-in time on precision-fit bearings and slides.

As a pipe-fitting compound, material assures quick disassembly regardless of age, heat or corrosion. It reduces friction and freezing in press-fitting, and prevents sticking of tight-wound flat coil springs.

**Features:** Suitable for use in any conventional lubrication system, alone or with regular oils and greases. Actual tests have shown that friction surfaces running at high speed and under heavy pressure heat up 300-504% faster with ordinary lubricating oil than when running with this lubricant alone. Also, with oil, the temperature continues to rise until failure and seizure result; with this lubricant, temperature reaches a stabilization point and then usually recedes.

Remarkable chemical stability is reported. Operates effectively

at sub-zero temperatures as well as at red heat.

**Description:** Molybdenum-base lubricant, Liqui-Moly, can be used alone or added directly to crank-case or other oils which carry it to friction surfaces where it "plates out" on the metal, providing a permanent, low-friction, anti-seizing coating.

Product is the result of developments of recent years, which dealt with the use of molybdenum metal for lubrication. This metal is an extremely "greasy" metal, practically indestructible at high temperatures and pressures. Certain forms of it have the faculty of "plating" firmly to any friction surface. This provides permanent film which cannot be "squeezed out" by high pressures, thus protecting bearing against scoring or seizing, even after all the oil has been burned out.

**Source:** Produced by The Lockrey Company, Lubricants Division, Dept. CP, 21-02 122nd St., College Point, N. Y. . . . or for more information check CP 6574 on handy form, pages 2 and 3.



## Insulation Board Mill Revises Presoak Procedure to Get Better Pulp

Points to possibilities of using method on hardwoods, cotton linters and flax shives

**PROBLEM:** A southern insulation board mill was not satisfied with the strength of pulp resulting when southern pine was presoaked in water before grinding.

Presoaking in a caustic soda solution increased strength, but, at the same time, caused the pulp to have an off color.

**Solution:** Wood is at present being given a 24-hr presoak in a 2% solution of Santosite. Temperature is maintained just below boiling point (at 200-210°F), and pressure is atmospheric. Grinding is conducted as usual after soaking.

Santosite is a technical grade anhydrous sodium sulfite. It is a tan crystalline powder assaying approximately 96%  $\text{Na}_2\text{SO}_3$ .

Presoaking liquor must be kept neutral or slightly alkaline so that sodium bisulfite will not be formed and attack the mild steel used in equipment. This is accomplished by addition of small amounts of soda ash or caustic soda whenever necessary.

**Results:** This method of presoaking provides a pulp of higher strength and of a good color, better on both counts than the water or caustic soda presoaks.

Santosite is currently being employed for chemical and semi-chemical pulping of a number of materials. These include cotton linters (chemical) for fine pulps; hardwoods for corrugating board, liner board and insulation board, and flax shives for insulation board (all semi-chemical pulping). It would appear that possibly certain advantages would result from presoaking some of these materials before pulping, as is done with the ground-wood billets in the plant mentioned earlier in the story.

**Source:** Santosite is a development of Monsanto Chemical Company, Dept. CP, St. Louis 4, Mo. . . or for more information check CP 6575 on handy form, pages 2 and 3.

### Rust-proofing metal parts told in chart

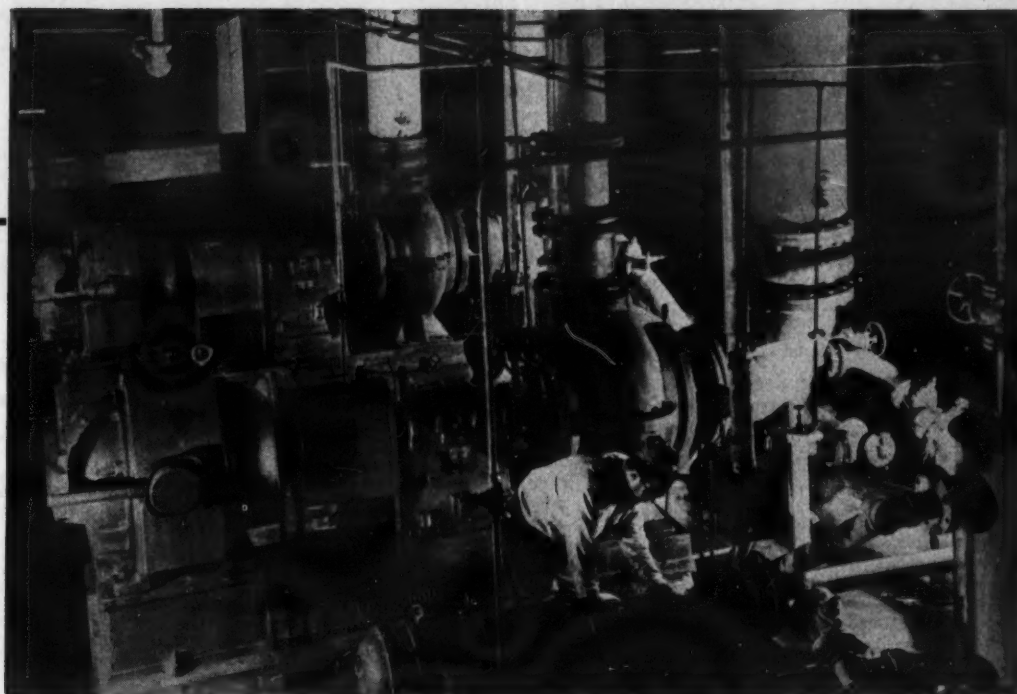
Chart gives authentic data for rust-proofing metal parts for protection against elements. Lists rust-proofing materials with accompanying application and removal methods, minimum protection periods, physical description of material, and miscellaneous data.

U. S. Government specifications for rust preventatives are enumerated with corresponding equivalents in maker's line. Chart No. 949, issued by Nox-Rust Chemical Corporation, Dept. CP, 2429 S. Halsted St., Chicago 8, Ill. When inquiring specify CP 6576 on handy form, pages 2 and 3.

### Guide for formulation of resin surface coatings

Guide tabulates physical, chemical properties of resins for use in surface coatings and printing inks. Resins include alkyl, melamine, phenol and urea types, as well as copolymer and dibasic-acid modified resins.

Copies available from American Cyanamid Co., Coating Resins Department, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 6577 on handy form, pages 2 and 3.



## For the Quality you want ...specify HOOKER CAUSTIC SODA

If you find it necessary to clean your caustic storage tanks frequently because of sludge deposits, it's time to try Hooker Caustic Soda. Thanks to a recently improved purification process, Hooker Caustic Soda is remarkably free from those impurities that leave sludge deposits. Low in iron and sulfates, it is a high purity product—a purity that is uniform in shipment after shipment.

You can be sure, too, that Caustic Soda from Hooker will reach you with the same high purity that it leaves our plant. Tank cars are all equipped with special protective linings. To make unloading and handling easier in cold weather, each tank car in the Hooker fleet is completely insulated and equipped with steam coils.

Hooker's Technical Staff is also at your service to give you help in the use and handling of Caustic Soda.

Hooker Caustic Soda is available in solid, flake, or liquid form. Liquid is supplied in 50%, 73% and special grade solutions.

For analyses and specifications on Hooker Caustic Soda, write on your business letterhead for technical data sheet No. 735.

**HOOKER  
CHEMICALS**

*From the Salt of the Earth*

HOOKER ELECTROCHEMICAL COMPANY

15 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.

SODIUM SULFIDE • SODIUM SULFHYDRATE • SODIUM BENZOATE • CAUSTIC SODA • MURIATIC ACID • PARADICHLOROBENZENE • CHLORINE

When inquiring check CP 6578 on handy form, pgs. 2-3

10-5

### Apply mineral wool insulation to sheet metal, brick

Users of insulation will find helpful guidance for applying mineral wool insulation to sheet metal and brick surfaces in 36-page Standard issued by Department of Commerce. Represents joint action between the Industrial Mineral Wool Institute and the National Bureau of Standards.

Covers loose, granulated, and felted forms of mineral wool in addition to blanket, block, and industrial-batt. Illustrates application to both flat and curved surfaces of all types encountered in high-temp installations. Specification data, recommended insulation thicknesses, installation data are included.

Standard CS117-49, entitled "Mineral Wool Insulation For Heated Industrial Equipment," issued by the Industrial Mineral Wool Institute, Dept. CP, 441 Lexington Ave., New York 17, N. Y. When inquiring specify CP 6579 on handy form, pages 2 and 3.

### Odorless, tasteless, non-toxic films resist weathering, many reagents . . .

flexible, tough coatings adhere tightly; show excellent performance with fumes, acids, alkalis

**Uses:** Protection of interior and exterior surfaces. Specific examples are structural members, outside of plating and pickling tanks, linings for tanks holding dilute solutions, outside of chemical-carrying tank cars, inside of water tanks, linings for shipping containers, mixing and processing tanks, concrete floors, many other types of equipment.

**Features:** No odor, taste or toxicity after solvent has been removed from coating. Films are impervious to fumes of most common acids (excluding acetic), and can be used in direct contact with most acids. Coatings have withstood severe conditions of industrial fumes and weathering for 8-10 years, with little or no deterioration.

Properly applied coating is dense; there are practically no pores for water to pass through and cause blistering. New principle in formulation maintains chemical resistance, but gives a coating with excellent adhesion, flexibility and toughness.

May be applied by spraying, brushing, dipping or roller-coating. Vinyl resins used in formulating coatings are highly resistant to oxidation, and hence, to aging.

**Description:** V-200 Series of vinyl coatings may be used for temperatures up to 180°F, or higher in some cases. Although flammable solvents are used, the dried film does not support combustion.

In lab tests, film was unchanged after immersion for 14 days in 7% HF-15% HNO<sub>3</sub> at 140° F. Under the same conditions, 20% NaOH caused slight yellowing, and bleach caused a trace of blistering above liquid, but no effect upon immersed section.

At the same temperature, but with 60-day immersion, 20% HCl and 20% H<sub>2</sub>SO<sub>4</sub> each had no effect on coating. Gasoline, denatured alcohol and fuel oil did not change film after 60 days at room temperature.

Carbon tetrachloride, aromatic solvents, ketones, aldehydes and esters each dissolved or softened the film.

In general, surfaces should be as clean as possible; free of grease, dirt and scale. Concrete should be dry and brushed free of loose dust. If it has been in contact with



Every month Monsanto publishes these pages of pertinent information, selected to help you improve your products, lower your production costs, increase your sales . . . Reprints will be sent regularly to you, or other members of your organization, on request.

## SANTICIZER 141

... only plasticizer giving vinyls flame resistance... plus nine other important qualities



WITH ORDINARY PLASTICIZERS plastic films burn readily.



WITH SANTICIZER 141 films will not support flame.

Monsanto's Santicizer\* 141, member of the world's most versatile family of plasticizers, delivers more desirable qualities to high-grade vinyls than any other plasticizer. With these qualities, you can gain more customer acceptance for your product . . . more repeat sales . . . more profit.

Compare the properties of Santicizer 141 with those of any other plasticizer. See how much more you get with Santicizer 141. The advantages delivered by Santicizer 141 include the following:

1. Flame resistance.
2. Low toxicity.
3. Softness and drape.
4. Resistance to weather.
5. Low-temperature flexibility.
6. Light stability.
7. Low volatility.
8. Resistance to embrittlement.
9. Strength, elasticity, abrasion resistance.
10. Improved processing.

If these qualities are important to your product, it will pay you to get full details on Santicizer 141. Use the coupon to get your free copy of the sixteen-page booklet: "Santicizer 141 . . . the Safe Plasticizer."

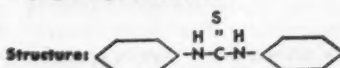


## Research Chemists' Corner

You may find something new here

Chemists who are looking for ways to improve their products or develop new ones may profit from studying the specifications of Monsanto's thiocarbonylurea (diphenyl thiourea) given here. Research in the application of this product is far from exhausted. It may hold the secret of great forward steps for your business. If you'd like to test thiocarbonylurea for its possibilities in your projects, we'll be pleased to send you a sample without cost and without obligating you in any way. Just indicate your wishes on the coupon!

### THIOCARBONYLUREA (Diphenyl Thiourea)



<b>Moisture:</b>	0.5% maximum (test must avoid decomposing conditions)
<b>Ash:</b>	0.5% maximum
<b>Specific Gravity:</b>	1.32 @ 25° C.
<b>Solubility:</b>	Soluble in alcohol. Insoluble in water and many other common solvents.

Two grades are available, one a white powder melting at 148° C. minimum and the other a white-to-grey powder melting at 146° C. minimum.

**Reactions:** A weak organic base. Boiling with hydrochloric acid results in formation of phenyl isothiocyanate. The sulfur can be removed by PbO in alcohol solution forming carbodiphenylimide or, in the presence of ammonia, diphenylguanidine. Condensation with CS<sub>2</sub> and sulfur under pressure produces 2-mercaptobenzothiazole.

## Take your choice of three forms of Monsanto Phenol

Whether you use phenol for any of various products, ranging from pharmaceuticals to photographic chemicals, you can get the form you want from Monsanto. Monsanto Phenol is available as: Phenol, U.S.P.; liquid phenol, 85% solution; and liquid phenol, 88% solution. Delivery of phenol, or any of the long list of Monsanto Intermediates, can be made promptly from the Monsanto Warehouse nearest your plant.

If you would like information or quotations on phenol or any of the Monsanto Intermediates, mail the coupon, or make your request to the nearest Monsanto Sales Office.

### Monsanto Intermediates for prompt delivery

ortho-Aminobiphenyl	ortho-Nitrochlorobenzene
para-Aminobiphenyl	meta-Nitrochlorobenzene
ortho-Anisidine	para-Nitrochlorobenzene
para-Anisidine	para-Nitrophenol
Benzoic Acid, Technical	ortho-Phenetidine
Benzotrifluoride	para-Phenetidine
Benzyl Chloride	Phenol, U.S.P.
meta-Chloroaniline	Phenol, liquids, 85% & 88%
ortho-Chloroaniline	Phenolsulfonic Acid, 65% & 70%
ortho-Chlorophenol	Phosphorus Oxychloride — Phosphorus Trichloride
para-Chlorophenol	Salicylic Acid, Technical
Cyclohexylamine	Sodium Benzoate, Technical
Dicyclohexylamine	para-Toluenesulfonamide
Dinitroaniline	para-Toluenesulfonchloride
Dinitrochlorobenzene, 46.5°	Toluenesulfonic Acid
Dinitrochlorobenzene, 48.0°	
Monsanto Salt	
ortho-Nitroaniline	
ortho-Nitrobiphenyl	
para-Nitrobiphenyl	

MONSANTO Sales Representatives are located in principal cities of the world. To get in touch with a sales representative, look under "Chemicals and Plastics" in the classified pages of your telephone book.



## Santomer No. 1 is hard-working detergent and wetting agent

In any process needing a reliable and hard-working detergent, wetter, emulsifier or penetrant, Santomer No. 1 proves itself to be efficient and economical. No other product in the classification of Santomer No. 1 wets faster, penetrates deeper or cleans cleaner.

Santomer No. 1 is the all-purpose detergent and wetting agent. It gives excellent results in hard or soft water . . . in acid or alkaline baths . . . in hot or cold solutions. Santomer No. 1 rinses out quickly and thoroughly . . . does not form insoluble curds and can be used for removing such deposits formed by other materials.

For technical information on Santomer No. 1 and its many applications, mail the coupon or contact the nearest Monsanto Sales Office.

## Try Sterox DNK in de-inking newsprint

Many re-uses of newsprint require that all the printing ink be removed. And, to make re-use practical, the ink must be taken out rapidly, thoroughly and economically. Sterox DNK meets all three of those requirements. Want to try it? Monsanto will provide technical counsel and Sterox DNK for a mill run . . . free.

MONSANTO manufactures more than 400 chemicals and plastics.

IF YOU WANT to make your own sulfuric acid, inquire about Monsanto-designed plants.

THERE ARE 27 MONSANTO plants, including those in Australia, Argentina, Canada, England and Wales.

MONSANTO CHEMICALS are used in producing more than 20,000 products.



**MONSANTO SODIUM PHOSPHATES** are produced in a modern chemical plant at Trenton, Michigan. Manufacturing processes are under strict production and laboratory control. This assures you of getting unexcelled quality and uniformity in sodium phosphates.

## Build better detergents with Monsanto Sodium Tripolyphosphate

Among the numerous sodium phosphates in the Monsanto line is sodium tripolyphosphate, a product worthy of thorough investigation by cleaning compound manufacturers.

Sodium tripolyphosphate is high in detergent, sequestering and water-softening power. Soap scum and curds, characteristic of hard water when soap is used, disappear with the application of sodium tripolyphosphate.

Like other Monsanto Phosphates, sodium tripolyphosphate is in good supply as a result of expanded manufacturing facilities. It can be shipped from one of ten warehousing points that dot the map from coast to coast and from border to gulf. For further information and quotations on sodium tripolyphosphate or any Monsanto Phosphate, contact the nearest Monsanto Sales Office or mail the coupon.

### Monsanto Sodium Phosphates and Some of Their Uses

**MONO SODIUM**—Water treatment, textiles, acid cleaning compounds.

**DI SODIUM**—Cheese, leather, textiles, detergents, dye, pigments.

**TRI SODIUM**—Water softeners, detergents, metal cleaners, textiles.

**TETRA SODIUM PYRO**—Soap, detergents, cheese, textile dyeing, bleaching and finishing, metal cleaning, oil-drilling mud, water treatment, water softeners, glass degreasing.

**TRI POLY**—Soap, detergents, water softeners, textile dyeing, bleaching and finishing, degreasing, metal cleaning, clay refining.

**ACID SODIUM PYRO**—Baking powder, oil-drilling mud, electroplating.

**OTHER MONSANTO PHOSPHATES**—Calcium phosphates, ammonium phosphates, potassium phosphates, ferro phosphorus, magnesium phosphates, aluminum phosphates, iron phosphates, alkyl acid phosphates, alkyl alkali phosphates, special phosphates and phosphoric acid.

MONSANTO CHEMICAL COMPANY, 1704-C South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

\*Reg. U. S. Pat. Off.



SERVING INDUSTRY...WHICH SERVES MANKIND

## MATERIALS

chemicals, the concrete should be neutralized, washed and dried. Usually, it is safe to apply coating over old paint. Wood surfaces must be dry and free of loose particles.

For maximum adhesion and toughness on metal surfaces, manufacturer's yellow zinc salt and phosphoric acid primer should be applied first. After drying for 1-2 hrs, an orange lead intermediate primer is applied and dried for 30-40 min, or baked for 5 min at 250° F. The vinyl coating is then applied, 1 hr being allowed between coats. Baking a few minutes at 300-350° F improves adhesion. For many applications, the vinyl coating may be applied directly to metal.

On new concrete, a sealer is first applied, followed by a coat of a primer. Old concrete need not be sealed, but should be primed before applying topcoats.

The V-200 coatings are supplied clear, white, gray, black, aluminum, tile red and green.

Source: Made by Pioneer Chemical & Manufacturing Co., Dept. CP, 1828 Columbus Rd., Cleveland 13, Ohio . . . or for more information check CP 6580 on handy form, pages 2 and 3.

### Prevents dusting, wearing of concrete floors . . .

coating easily applied by flushing its water solution; forms water-insoluble surface

Uses: Coating for concrete floors — renders them dust-proof, oil-proof, grease-proof as well as wear and acid-resistant. For filling surface pores of concrete floors against foreign matter and weather.

Features: Simple to apply — dissolved in water and flushed over floor. Penetrates 1/10" on ordinary concrete, filling all voids; forms a "glass-like" crystal which cannot be re-dissolved.

Prevents dusting and wearing of concrete floors subject to heavy traffic.

Description: Flintcrust under ordinary circumstances requires 3 applications. One, one and one-half, and two pounds of coating are dissolved per gallon of water for 1st, 2nd, and 3rd application respectively. Each is applied after preceding one has dried. One pound Flintcrust covers 25 to 30 sq. ft. (3 applications).

Source: Product of the Flexrock Company, Dept. CP, Filbert & Cuthbert, West of 36th, Philadelphia 4, Pa. . . or for more information check CP 6581 on handy form, pages 2 and 3.

### Lists 370 I. G. Farben processes

Nineteen pages comprise listing of 370 reports of I. G. Farben manufacturing processes for chemical intermediates used in production of dyes, textile auxiliaries, pharmaceuticals, color bases, synthetic tanning agents, and other specialties. These German translations give detailed instructions for industrial-scale preparation of compounds. Compounds are enumerated in alphabetical order by commercial and chemical names to facilitate rapid selection.

Most reports listed are priced at 2 and 3 dollars; several lengthy publications are priced to 6 dollars. Research Bulletin No. 40, issued by Research Information Service, Dept. CP, 509 Fifth Ave., New York 17, N. Y. When inquiring specify CP 6582 on handy form, pages 2 and 3.

Products	Data	Prices
Santomer No. 1	.....	.....
Sodium Tripoly Phosphate	.....	.....
Thiocarbamide	.....	.....

Literature: .....Santicizer 141

MONSANTO CHEMICAL COMPANY  
1704-C South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information and samples as indicated at the left.

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

# HEYDEN

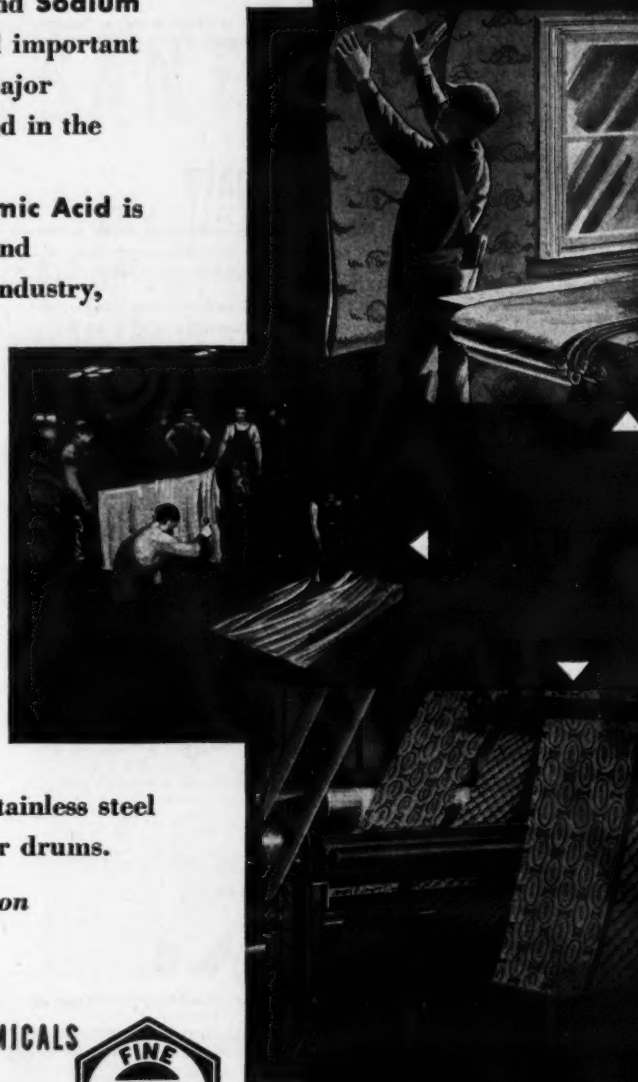
**Heyden Formic Acid (85% and 90%) and Sodium Formate** are used extensively in several important and diversified industries. They serve major roles in the textile and leather fields, and in the production of wallpapers.

In the textile industries, **Heyden Formic Acid** is employed in the dyeing, mothproofing and impregnating of fabrics. In the leather industry, it inhibits mold-growth and is used for deliming, pickling, swelling, soaking, disinfecting and tanning of hides.

**Sodium Formate** is used as a mordant in dyeing and printing, as a humectant, and in the chrome tanning of leather. It has given very satisfactory results in the production of water-resistant wallpapers.

**Containers:** Formic Acid is shipped in 125 lb. carboys or 500 lb. stainless steel drums; Sodium Formate in 300 lb. fiber drums.

*Samples mailed promptly upon request on company letterhead.*



*Serving Industry* THROUGH FINER CHEMICALS

# HEYDEN

## CHEMICAL CORPORATION



393 SEVENTH AVENUE, NEW YORK 1, N. Y.

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## MATERIALS

### **Small fungicide dosage protects turf . . .**

cadmium salt cures lawns that are very unhealthy

**Uses:** Prevents and cures dollar spot, copper spot and pink patch of turf.

**Features:** One-half ounce per 1,000 sq ft per month provides effective protection. Lawn areas that were 78% dead have been restored to 100% health within a month.

**Description:** Cadimate, an organic cadmium salt, has been successfully tested in several agricultural experiment stations.

Of interest is the easily-opened half-ounce packet in which the product is marketed. It assures convenience in applying, and eliminates waste due to guesswork in measuring the dosage.

**Source:** Mallinckrodt Chemical Works, Dept. CP, Second and Mallinckrodt Sts., St. Louis 7, Mo. . . or for more information check CP 6583 on handy form, pages 2 and 3.

### **Uses, properties for 36 solvents**

Thirty-six petroleum-base solvents, together with their recommended uses, are tabulated in 8-page, 2-color catalog. Physical properties are also tabulated; comparative evaporation rates are charted.

Technical Catalog #8, issued by the American Mineral Spirits Company, Dept. CP, 230 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 6584 on handy form, pages 2 and 3.

### **Simplifies selection of fatty acids, glycerides**

Composition and physical properties for 21 fatty acids, 15 glycerides, 9 sperm products, and 5 alcohols are tabulated in handy, 16 x 24" chart. Chart 858, issued by the Chemical Products Department, The Werner G. Smith Co., Div. Archer-Daniels-Midland Company, Dept. CP, 2191 West 110th St., Cleveland 2, O. When inquiring specify CP 6585 on handy form, pages 2 and 3.

For more information on product at left, specify CP 6586 . . . see information request blank between pages 2-3.



## MATERIALS

### **After 3 years' service, tank lining still in fine shape . . .**

5-coat system withstands acids, alkalis, etc; will not peel

**Uses:** Protective lining for petroleum and chemical tanks. Withstands sour crude, salt water, alkalis, most acid solutions, many solvents, corrosive gases and fumes.

**Features:** Does not blister or peel.

**Description:** This 5-coat system is not specified for certain applications. It is readily soluble in the ketone and ester group of solvents, and its resin films will not withstand operating temperatures above 180°F.

Each coat is applied carefully under proper conditions, and to a certain thickness. Since each coat is a different color, assuring proper thickness of coating is simplified. When coat being applied completely covers previous coat, proper thickness has been attained.

First test applications of Vinyl-Cote were made nearly 3 years ago in tanks of oil fields on the Gulf Coast and in the Midwest. These coatings are said to be still in excellent condition today.

**Source:** Developed by The Glidden Company, Dept. CP, 11001 Madison Ave., Cleveland 2, Ohio. . . or for more information check CP 6587 on handy form, pages 2 and 3.

### **Bare results of research on coatings for paper**

Condensed technical data on nitrocellulose packaging and paper lacquers presented in 32-page, 2-color booklet are result of extensive paper-coating research. Includes description of formulations with 4 different plasticizers and 9 different resins used for coating paper in tests. Explains test methods.

Gives properties of the coatings investigated — covering flexibility, grease resistance, scuff resistance, color stability, and specular gloss. Discusses heat-sealing and moisture-proof heat-sealing coatings; suggests starting formulas for paper-coating lacquers. Contains 16 charts and graphs.

"Packaging and Paper Lacquers . . . Based on Nitrocellulose", issued by the Hercules Powder Company, Dept. CP, Wilmington, Del. When inquiring specify CP 6588 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6589 . . . see information request blank between pages 2-3.

## "WHITE CARBON"

### AMBERLITE IRC-50

A cation exchange resin of extremely high capacity, remarkable elution efficiency, and unusual selectivity—a selectivity made possible by the ability of the resin to be buffered to a wide range of salt-to-free-acid ratios. The resin is stable at high temperatures and in acids, bases, mild oxidizing and reducing agents, and all common organic solvents.

#### Suggested Uses

- purification of antibiotics
- recovery of vitamins
- recovery of metals
- dealkalization of water
- adsorption of alkaloids
- reverse deionization of acid-sensitive systems

AMBERLITE IRC-50 Analytical Grade, in quantities up to 25 pounds, is supplied exclusively by

Eimer & Amend  
Greenwich & Morton Sts.  
New York 14, N.Y.

Fisher Scientific Co.  
717 Forbes Street  
Pittsburgh 19, Pa.

AMBERLITE is a trade-mark, Reg. U.S. Pat. Off. and in principal foreign countries.

CHEMICALS

FOR INDUSTRY

## ROHM & HAAS COMPANY

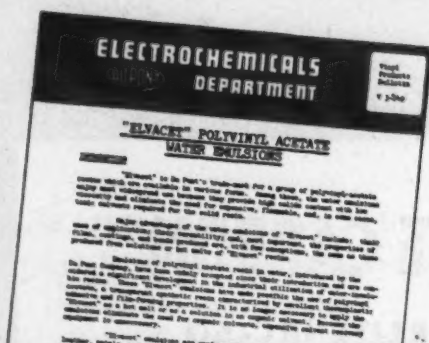
THE RESINOUS PRODUCTS DIVISION

Washington Square Philadelphia 5, Pa.

The Resinous Products Division was formerly The Resinous Products & Chemical Company

# Your Problem Today

may be  
solved by  
using



## DU PONT "ELVACET" POLYVINYL ACETATE EMULSION

Versatile Du Pont "Elvacet" emulsion has already proved to be the solution to many problems in many fields. Perhaps this interesting resin emulsion can lead to a *saving in your operations* . . . an *improvement in your product* . . . or to *development of an entirely new and profitable item*. Why not look into its outstanding possibilities right now?

### "Elvacet" is already being used for:

**ADHESIVE COMPOSITIONS**  
**BINDERS**  
**GREASE-PROOF COATINGS**  
**TEXTILE FINISHES:** fabric stiffeners, coatings; laminations; hat sizes.

**"Elvacet" emulsion contains** colorless, odorless, non-yellowing film-forming resin with excellent aging and light-fastness properties. It is easily applied, requiring no costly or flammable solvents and is uniformly dispersed in water. Furthermore, "Elvacet" emulsion exhibits wide latitude in compounding with starches, dextrin, gums, waxes, many synthetic resins, chlorinated rubber, rubber latex and other common types of extenders, pigments and plasticizers.

**FOR FURTHER INFORMATION** about "Elvacet" emulsion, help in its use for a specific application, samples, etc., clip the coupon below and send it today to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Dept., Wilmington 98, Delaware.

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DU PONT  
ELECTROCHEMICALS



BETTER THINGS FOR BETTER LIVING  
THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)  
Electrochemicals Dept., Wilmington 98, Del.  
Please send me information about "Elvacet" polyvinyl acetate emulsion.

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_

CP-1

When inquiring check CP 6590 on handy form, pgs. 2-3

## MATERIALS

### Outlines complete plan for boiler water treatment

Eight-page, 2-color booklet outlines a complete plan for boiler water treatment — aimed at preventing boiler scale, corrosion, etc. Concern makes thorough investigation at boiler plants in the field to gather data for determining conditioning required; selects most suitable water treatment after data has been carefully analyzed.

If external treatment is indicated, recommendations for processes and types of equipment are given. If internal treatment is required, ingredients are supplied with complete follow-through supervision in their application. Step-by-step discussion of plan, as well as technology of treatment are included; many illustrations. "Complete Boiler Water Treatment," issued by Power Chemicals Division, E. F. Drew & Co., Inc., Dept. CP, 15 East 26th St., New York 10, N. Y. When inquiring specify CP 6591 on handy form, pages 2 and 3.

### Speeds furnace copper brazing; conserves material . . .

copper in paste form replaces conventional rings, foil, slugs and electroplate in many applications

**Uses:** Employed instead of conventional copper rings, foil, slugs and electroplate in furnace copper brazing.

**Features:** Quickly applied; comparatively little waste. Surfaces surrounding joint are cleaner, neater.

**Description:** Paste form of copper is available in two general types: one with synthetic petroleum base, the other with a base that does not change viscosity with temperature. The first may be applied without thinning by special guns developed by manufacturer (see below), but it may be thinned with kerosene or light fuel oil for application by brush, spray or dip.

The vehicle of this type thins as temperature increases, permitting the copper to flow around the joint, even though it is applied in one spot.

This form of product does not settle, harden or dry, either in can or on the job. It has minute quantity of practically residue-free, non-corrosive flux.

The non-petroleum base pastes do not become thin when heated, so there is less tendency for the copper to flow away from the joints. When vehicle decomposes in furnace, hydrogen and carbon monoxide are given off. Pastes are of heavy consistency and may be thinned with water or a permanent-type antifreeze.

Many plants are using baths of these pastes at assembly presses. One piece is dipped into paste before assembly on press. Paste acts as lubricant for the press fit, and deposits the copper at junction of the two parts for subsequent brazing.

The applicator guns mentioned above apply the paste as an extrusion in the form of rounds or ribbons, in definite quantity, depending on trigger setting. One type of gun is for hand use. The other, a pneumatic type, can be set for automatic operation and actuated by foot pedals, cams or electrical controls.

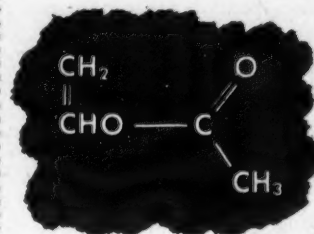
In many cases, guns can be used to apply one or two dots of paste at assembly junction, where a ring was previously used. When two or more dots are to be applied, a multiple-tipped nozzle on gun permits them to be put down with one trigger squeeze.

Incorporation of a small amount of finely divided iron

# NIACET

Trade Mark

## UNPOLYMERIZED VINYL ACETATE (STABILIZED)



**BOILING RANGE**  
71.8° to 73°C.

Vinyl Acetate can be polymerized to form resins with exceptional bonding qualities for wood, glass, metal and fibre.

Vinyl Acetate can be used for synthesis of

a-b-dichloroethyl acetate,  
b-monochlor ethyl acetate,  
b-chloro acetals,  
2-aminothiazole,  
chloroacetaldehyde  
and many others.

Containers: —

410 lb. drums

62,500 lb. tank cars

For further information write to:



**Sales Offices:**

926 Niagara Bldg. • Niagara Falls, N. Y.

When inquiring check CP 6592 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## MATERIALS

powder produces a cementing material that can be used where loose fits (to allow for expansion) are required. The cement action holds the copper in place, fills cracks or loose joints, and provides fillets to the desired size.

**Source:** "Cubond" is a development of Metals Refining Company, a division of the Glidden Company, Dept. CP, 1717 Summer St., Hammond, Ind. . . or for more information check CP 6593 on handy form, pages 2 and 3.

### Minimize glaze rejects in ceramic production . . .

slip ingredient facilitates handling, produces uniform finish, improves binding, prevents running

**Uses:** Glaze slip ingredient recommended for producers of ceramic dinnerware, sanitary ware, and tile. Primary function is that of a film former, hardener, binder, suspending agent, and leveler.

**Features:** Reduces glaze rejects by facilitating handling, by producing a more uniform finish, by improving binding, and by diminishing running and sagging. Highly effective in dip and spray methods of application.

**Description:** Methocel is available in 6 viscosity types: 15, 25, 100, 400, 1500, and 4000 cps. Little or no thickening results from addition of 4-8 ozs of the lowest viscosity type per 100 lbs dry glaze. Where running and sagging present a problem, higher viscosity types can be used — the 4000 cps producing slips of maximum viscosity.

Dry powdered Methocel can be added to the ball mill when it is charged. Wet milling for several hours is sufficient for complete water solution of the particles. A de-aired (Dow polypropylene glycol) is recommended for use with the ingredient to prevent foaming of its solutions. One part Methocel to 2 parts de-aired is successful.

Ingredient contributes hardening by depositing a film from its water solution upon drying. One-quarter percent (based on weight of dry glaze) imparts noticeable hardening to unfired glaze coat. Maximum required for most applications is 1/2% or 8 ozs per 100 lbs dry glaze. Sometimes incorporation of Methocel retards drying rate of applied glaze. This is easily remedied by replacing some of the water with alcohol, or by reducing water content of the slip.

**Source:** Samples are available from the Technical Service & Development Division, The Dow Chemical Company, Dept. CP, Midland, Mich. . . or for more information check CP 6594 on handy form, pages 2 and 3.

### Chart aids paint selection, lists characteristics

Manufacturer's 16 paint products, classified according to types of surfaces to be painted, are listed in handy paint selection chart. Twenty performance characteristics, such as: sprayability, recommended primer, average coverage, etc., are given in tabular form for each paint.

A fill-in paint comparison table is included (instructions and examples are given) for use in conjunction with the chart. Simplifies selection of the best paint for specific jobs.

"Paint Selection Check Chart", issued by The Wilbur and Williams Company, Dept. CP, Greenleaf and Leon Sts., Boston 15, Mass. When inquiring specify CP 6595 on handy form, pages 2 and 3.

# First Time Offered!

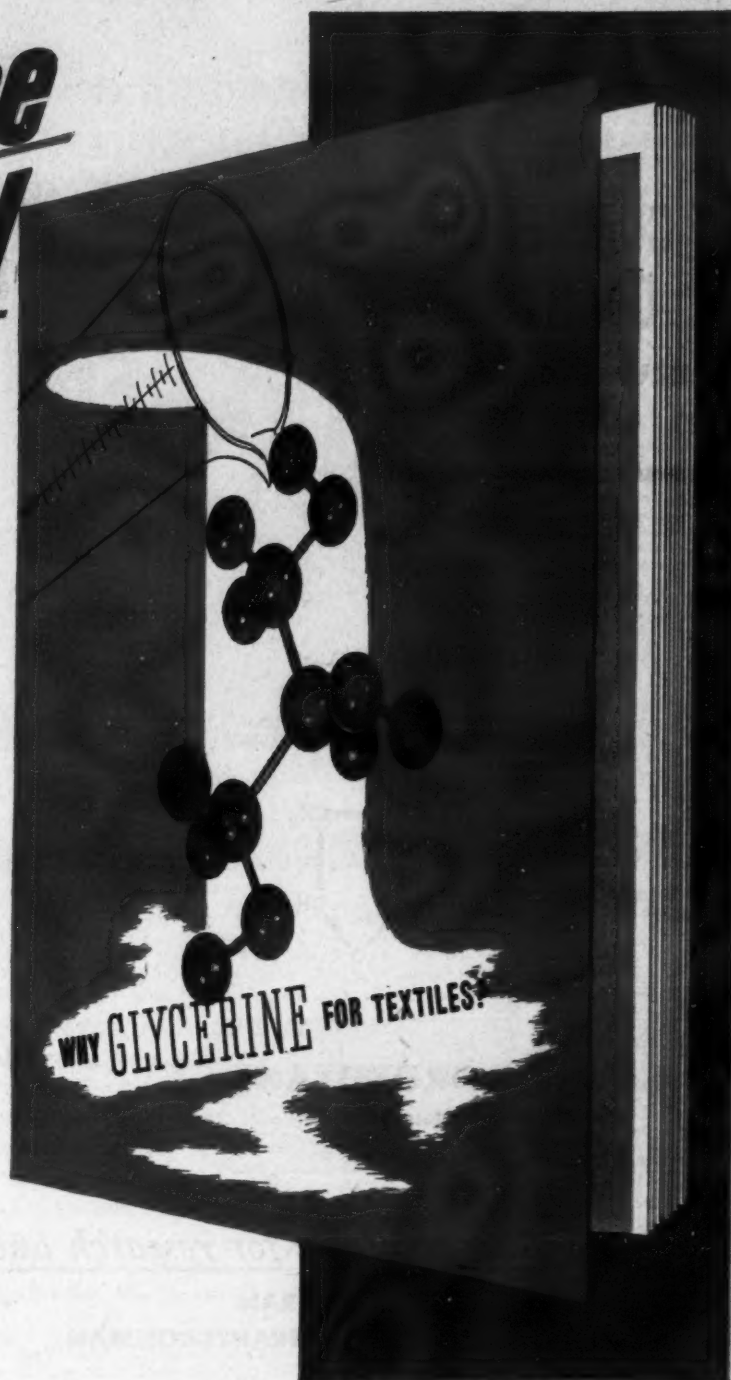
a practical review of  
GLYCERINE applications in  
Textiles . . .

**W**HERE? . . . How? . . . Why? . . .

If you're looking for the answers to these questions on glycerine usage in the textile industry—here's the most up-to-date information available!

"Why Glycerine for Textiles?" has been reviewed by a number of technical consultants as well as the Research Laboratories of the Glycerine Producers' Association. Contains detailed information by charts and tables of the physical properties of glycerine—the origin, development, and chemistry of this amazingly useful alcohol—grades and their applications. 12 pages of practical, useful data!

Whether you now use glycerine or just wonder about its possibilities . . . whether you're in management, production, or research . . . an expert on glycerine, or thoroughly unfamiliar with the subject—you'll want this informative booklet. Write for your free copy—today! Address: Dept 5, Glycerine Producers' Association, 295 Madison Avenue, New York 17, New York.



One of a series of five booklets on the industrial applications of glycerine. Also available on request: Why Glycerine? (a general survey of all main uses) . . . Why Glycerine for Alkyd Resins and Ester Gums? . . . Why Glycerine for Drugs and Cosmetics? . . . Why Glycerine for Foods?

**GLYCERINE PRODUCERS' ASSOCIATION**

295 Madison Avenue, New York 17, N. Y.

When inquiring check CP 6596 on handy form, pgs. 2-3

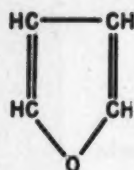
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**DRUMS—C.L. or L/C.L.  
TANK CARS**



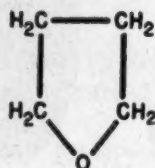
# FURAN CHEMICALS

## FURAN Chemical Intermediate

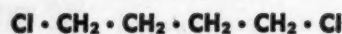


B.P. 31°C.  
7 lbs./gal.  
Purity 97%+

B.P. 65-67°C.  
7 lbs./gal.  
Purity 99%+



## TETRAHYDROFURAN Specialized Solvent Chemical Intermediate



B.P. 155°C.  
9 lbs./gal.  
Purity 93%+

## 1,4-DICHLOROBUTANE Chemical Intermediate

*Also available for research and development*

- 2-METHYL FURAN
- 2-METHYL TETRAHYDROFURAN
- PYRROLE
- PYRROLIDINE

**DU PONT  
ELECTROCHEMICALS**

FIELD RESEARCH SECTION



Better Things for Better Living . . . Through Chemistry

**A REQUEST** on your company letterhead will bring technical bulletins, price information, and samples if desired. Just write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Dept., Field Research Section, Wilmington 98, Delaware.

When inquiring check CP 6597 on handy form, pgs. 2-3

## MATERIALS

### Gives detailed properties to aid in selecting insulation

Data on thermal conductivity and sound absorption properties of Fiberglas thermal insulation are given in a 16-page bulletin. Numerous illustrations picture applications and methods of applying the insulation in its various forms (as wool, preformed, asphalt enclosed board, batts, and blowing wool.)

Properties, characteristics, description, size, packaging and uses are described in detail. Recommendations are made for insulating boiler jackets, air conditioning units, roofs, ducts, pipes, and for use at temperatures ranging from sub-zero to approximately 1000°F.

Copies are available from Owens-Corning Fiberglas Corporation, Dept. CP, Toledo 1, Ohio. When inquiring specify CP 6598 on handy form, pages 2 and 3.

### Odor of crystal-clear plasticizer is missing; acid number cut to 0.05 . . .

improved dioctyl phthalate has Hazen number less than 100; keeps other desirable properties

**Uses:** Plasticizer for vinyl and other synthetic resins, and for nitrile-type rubbers. Imparts heat and light stability, permanent flexibility, resistance to hydrolysis, low water extraction and excellent electrical properties.

**Features:** Improvements in product have been made to make it odor-free, reduce the acid number (it is now under 0.05), and lower the Hazen number (water-white color rating) to less than 100.

**Description:** Dioctyl phthalate plasticizer is available in commercial quantities. The improvements have been made without sacrificing any of the other properties.

Since other compounding ingredients affect the odor of the finished plastic product, the fact that the improved plasticizer is odor-free does not mean that the finished product will be entirely odorless. However, the product will markedly reduce the odor level.

Manufacturer emphasizes that the reduced acid number indicates excellent stability and freedom from volatile substances.

**Source:** Good-rite GP 261 is a product of B. F. Goodrich Chemical Company, Dept. CP, Rose Bldg., Cleveland 15, Ohio . . . or for more information check CP 6599 on handy form, pages 2 and 3.

### Improves aging, color, clarity of vinyl products

stabilizer augments flexing and folding properties of vinyl films

**Uses:** Stabilizer for vinyl stocks. Designed for use in vinyl plastisols, organosols, emulsions, and regular milled and calendered films.

**Features:** Improves aging, color, and clarity properties of vinyl products exposed to high temperatures, ultra-violet, and outdoor aging. Light-fastness and clarity of vinyl films are especially noticeable. Flexing and folding properties of these films are improved; stabilizer does not interfere with heat sealing or subsequent printing of film. Stabilizing action is marked under high processing heat; doesn't cause gassing or blooming.

**Description:** Stabelan "E" has recently been released

CHEMICAL PROCESSING



## MATERIALS

by the Stabelan Chemical Company. According to laboratory reports, the stabilizer is compatible with many tested pigments. Organic reds hold their hue and age well when used with the stabilizer. Adequate test and production supplies are available.

**Source:** Distributed by the Harwick Standard Chemical Company, Dept. CP, Akron, O . . . or for more information check CP 6600 on handy form, pages 2 and 3.

### Prevents rusting of metals . . .

clear paint can be applied over rust, and covered with a good-quality paint if desired

**Uses:** Primarily as rust-proofing primer and undercoat for any quality paint or finish (except lacquer). Can be used alone.

**Features:** Can be brushed or sprayed directly over rust, without wire-brushing or scraping. Does not bleed through painted surfaces.

**Description:** Manufacturer states that this clear anti-rust paint has all of the penetrating and sealing qualities of his black and aluminum paints. It is available in quart, gallon and 5-gallon cans, and in 55-gallon drums.

**Source:** Rustrem Clear is a product of Speco, Inc. Dept. CP, 7308 Associate Ave., Cleveland 9, Ohio . . . or for more information check CP 6601 on handy form, pages 2 and 3.

### Offer technical data bulletin on di-vinylbenzene

Technical data bulletin on di-vinylbenzene has been released. Product is a monomeric mixture of the 3 isomers of di-vinylbenzene and ethylvinylbenzene, stabilized with an inhibitor. Bulletin suggests applications for the monomer; procedures for polymerization and copolymerization are discussed, as well as its properties, inhibitors, antioxidants, and handling precautions.

Covers bromate-bromide and mercuric-acetate titration procedures for vinyl-group determination. Other information includes phenomena of "popcorn copolymer", and monomer's use in synthetic rubber. Bulletin is obtainable from The Dow Chemical Company, Dept. CP, Midland, Mich. When inquiring specify CP 6602 on handy form, pages 2 and 3.

### Provides data on special sensitized films, plates

Sensitized plates and films for spectrochemical analysis; spectroscopic plates and films for specialized applications in recording radiant energy; film for spectrography and work in the far ultraviolet; nuclear track plates for observing and recording phenomena in nuclear physics; and metallographic plates for general photomicrography are featured in 8-page, 2-color booklet.

Describes wide selection of emulsions available with these sensitized materials; includes complete information regarding emulsion sensitivity. Contains specifications, many tables and charts. "Sensitized Materials for the Scientific and Industrial Laboratory", issued by Industrial Photographic Division, Eastman Kodak Company, Dept. CP, Rochester 4, N. Y. When inquiring specify CP 6603 on handy form, pages 2 and 3.

# Evidence!

## BEVERAGES TO RUSTPROOFING TO PHARMACEUTICALS . . .



## VICTOR PHOSPHORIC ACID is versatile

Victor phosphoric acid is used in many widely varying applications. Typical of its versatility are the uses listed below. Perhaps Victor phosphoric acid can be used in your process and may provide new advantages. Why not investigate this possibility? We shall be pleased to receive your inquiry.

### USES OF VICTOR PHOSPHORIC ACID:

**Manufacturing Yeast, Sugar,  
Soft Drinks, Imitation Jellies, Gelatin,  
Glue, Metal Cleaning Compounds, Pharmaceuticals,  
Explosives, Dental Cements,  
Plant Food, Phosphates,  
Rustproofing, Engraving,  
Refining Oil and Gasoline,  
Dyeing, Electro-Polishing Metals,  
Brightening Baths for Aluminum**

Victor phosphoric acid is a clear, colorless, sparkling liquid. All grades meet the requirements of the Federal and State Pure Food Laws. Available in concentrations of 50%, 75%, and 85% N.F. Available in tank cars, 13 gal. glass carboys, 55 gal. stainless steel drums, 55 gal. steel drums (inhibited acid).

Write for Quotations, Technical Data, or Experimental Samples



## VICTOR CHEMICAL WORKS

141 WEST JACKSON BOULEVARD • CHICAGO 4, ILLINOIS



A. R. Maas Chemical Company, Division

4570 Ardine Street, South Gate, California

### VICTOR CHEMICALS FOR INDUSTRY

Aluminum Formate  
Aluminum Phosphates  
Monoammonium Phosphate  
Diammonium Phosphate  
Monocalcium Phosphates  
Dicalcium Phosphate  
Tricalcium Phosphate  
Ferric Orthophosphate  
Sodium Iron Pyrophosphate  
Ferrophosphorus  
Formic Acid  
Oxalic Acid  
Phosphoric Acids  
Carbamide Phosphoric Acid  
Phosphoric Anhydride  
Phosphorus  
Phosphorus Oxichloride  
Phosphorus Trichloride  
Potassium Phosphates  
Hemisodium Phosphate  
Monosodium Phosphate  
Disodium Phosphate  
Trisodium Phosphate  
Tetrasodium Pyrophosphate  
Sodium Tripolyphosphate  
Sodium Acid Pyrophosphate  
Sodium Formate  
Sodium Oxalate  
Stabilizers  
Tetraethyl Pyrabase  
Wetting Agents

### INDUSTRIAL USES OF VICTOR CHEMICALS

Baking Powders  
Bread—Yeast  
Ceramics—Glass  
Evaporated Milk  
Cookies—Crackers  
Cosmetics  
Denture Cleaners  
Detergents  
Dyeing  
Flameproofing  
Food Enrichment  
Insecticides  
Laundering  
Leather Tanning  
Metals and Alloys  
Metal Cleaning  
Metal Plating  
Nutrient Solutions  
Oil Drilling Muds  
Organic Chemical Mfr.  
Paint—Varnish  
Petroleum Refining  
Pharmaceuticals  
Phosphated Flour  
Plastics  
Prepared Flour Mixes  
Process Cheese  
Pulp and Paper  
Pyrotechnics—Munitions  
Rustproofing  
Salt  
Self-Rising Flours  
Soaps  
Soft Drinks  
Sugar  
Textile Processing  
Tooth Powder & Paste  
Water Proofing  
Water Treatment

When inquiring check CP 6604 on handy form, pgs. 2-3



## How Can Methocel Serve You?

There are five ways Methocel (Dow Methylcellulose) can serve you—five ways that Methocel, a synthetic gum, is already serving the paint, paper, leather, rubber, drug, cosmetic, and many other industries.

Consider these superior uses of Methocel:

1. *As an Emulsion Stabilizer*, Methocel acts both as a depressant for the surface tension of water and as a thickener and protective colloid for stabilizing emulsions.
2. *As a Binder*, Methocel forms a tough, inert

adhesive suitable for various binding applications.

3. *As a Film Former*, Methocel produces an excellent transparent film, tough, flexible and water-soluble.
4. *As a Thickener*, small quantities of high viscosity types are extremely effective.

5. *As a Suspending Agent*, Methocel's thickening and protective colloid properties contribute to the suspension of pigments and fillers in water.

Try the new METHOCCEL, *powdered*. Find out how these five performance factors can help you!

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

THE  
new

*Methocel*

DID YOU GET YOUR SAMPLE?

The Dow Chemical Company  
Dept. MS-919-1, Midland, Michigan

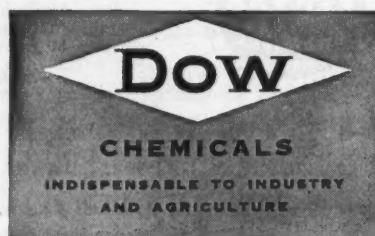
Please send free sample of METHOCCEL, for use in  
Check viscosity desired: 15, 25, 100, 400, 1500, 4000 cps.

Name and Title

Firm

Address

City State



When inquiring check CP 6605 on handy form, pgs. 2-3

## MATERIALS

### 6 times more floor wear from metal-aggregate layer

Photos of 48 installations depict "iron-clad" concrete floors in service under many different abrasive and corrosive conditions. Thirty-six-page booklet gives full information on methods of applying layer of metal-aggregate cement. States that such floors resist wear 4 to 6 times longer than plain concrete.

Points out freedom from frictional and static sparking, ease of cleaning, corrosion resistance, resistance to dusting, other advantages. Shows how non-slip surface can be formed on armored layer.

Inserts show colors which are available if desired. "Masterplate 'Iron-clad' Concrete Floor", issued by The Master Builders Co., Dept. CP, Cleveland 3, O. When inquiring specify CP 6606 on handy form, pages 2 and 3.

### Coating for metals adheres to smooth surfaces without curing . . .

inhibits chemical, moisture attack; air-dries rapidly; imparts neither taste, odor, nor toxicity

**Uses:** Vinyl resin formulation for metal coating, particularly effective in applications where metal is subject to deterioration from chemical or moisture attack. Recommended for service over an operating temp range of -40°F to 160°F, wet or dry conditions.

**Features:** Excellent adhesion to relatively smooth surfaces without heat curing. Air dries rapidly; equipment can be placed in service 1 hr after application. Applied film is non-flammable; imparts neither taste, odor, nor toxicity.

**Description:** Designated as Dampney Vinyl Coating, material may be modified and adapted to meet individual needs. Resistant to alkalis and mineral acids, coating is insoluble in alcohols, greases, oils, and aliphatic hydrocarbons. Has low permeability to water vapor, and low water absorption.

Forms extremely tough and durable, as well as decorative, surface; available in clear, black, or gray high-gloss finishes. Other colors may be formulated to meet special requirements. May be applied by either brush or spray; coverage is 400 sq ft per gal.

**Source:** The Dampney Company of America, Dept. CP, Hyde Park, Boston 36, Mass., is maker. For more information check CP 6607 on handy form, pages 2 and 3.

### Make vapor-tight packages using "drug store" fold, twisting wrap's ends . . .

aluminum foil-backed paper inhibits rust on parts

**Uses:** Wrapping paper for vapor-tight packaging of new and spare parts.

**Features:** Wrapped units or parts will remain rust- and corrosion-free for long periods of time, manufacturer reports. Vapor-tight packages are possible by using a "drug store" fold and twisting ends of wrapping. No waxes, tapes, or heat are necessary. Wrapping, in addition to being waterproof, is scuff-proof, resistant to oils, greases, mild alkalis and acids. Lab tests show wrapping has good tensile and tear strengths.

**Description:** Stanwrap No. 40 is an aluminum foil-

CHEMICAL PROCESSING



## MATERIALS

backed wrapping paper. Its coating eliminates need for extra innerwrap; assures absence of loose paper fibers that might contaminate wrapped parts.

Wrapped samples of SAE 1020 steel bars in lab tests showed no corrosive effects after 100-hour exposure to an atmosphere of 100° F and relative humidity of 95%. Test was conducted with both foil and paper side out.

Stanwrap No. 40 is being produced commercially; is available in continuous rolls up to 36" wide. Also available in sheets up to 36" wide x 50" long.

**Source:** Product of the Standard Insulation Corporation, Dept. CP, 74 Paterson Ave., East Rutherford, N. J. . . . or for more information check CP 6608 on handy form, pages 2 and 3.

### "Stickum" joins polyethylene film and kraft paper . . .

"resyns" eliminate need for heat as sealing medium

**Uses:** For adhering polyethylene film to both regular and bleached kraft paper.

**Features:** Eliminates use of heat as sealing medium.

**Description:** "Resyns", the result of extensive research and development work by National Adhesives, are now being employed in the fabrication of polyethylene-lined kraft bags on high-speed machines. Promising results are being obtained in adhering polyethylene to cloth and burlap, to foil, and to itself.

**Source:** Product of National Adhesives, Dept. CP, 270 Madison Ave., New York 16, N. Y. . . . or for more information check CP 6609 on handy form, pages 2 and 3.

### Physical properties of 6 chromium compounds

Properties of 6 technically-important hexavalent chromium compounds are technically discussed in 5-page pamphlet. Gives physical appearance and crystal structure; density and melting points of the solid, transition points between hydrates, eutectic with water, data for the system salt-water, density and pH of solutions, and heat capacity and viscosity of solutions.

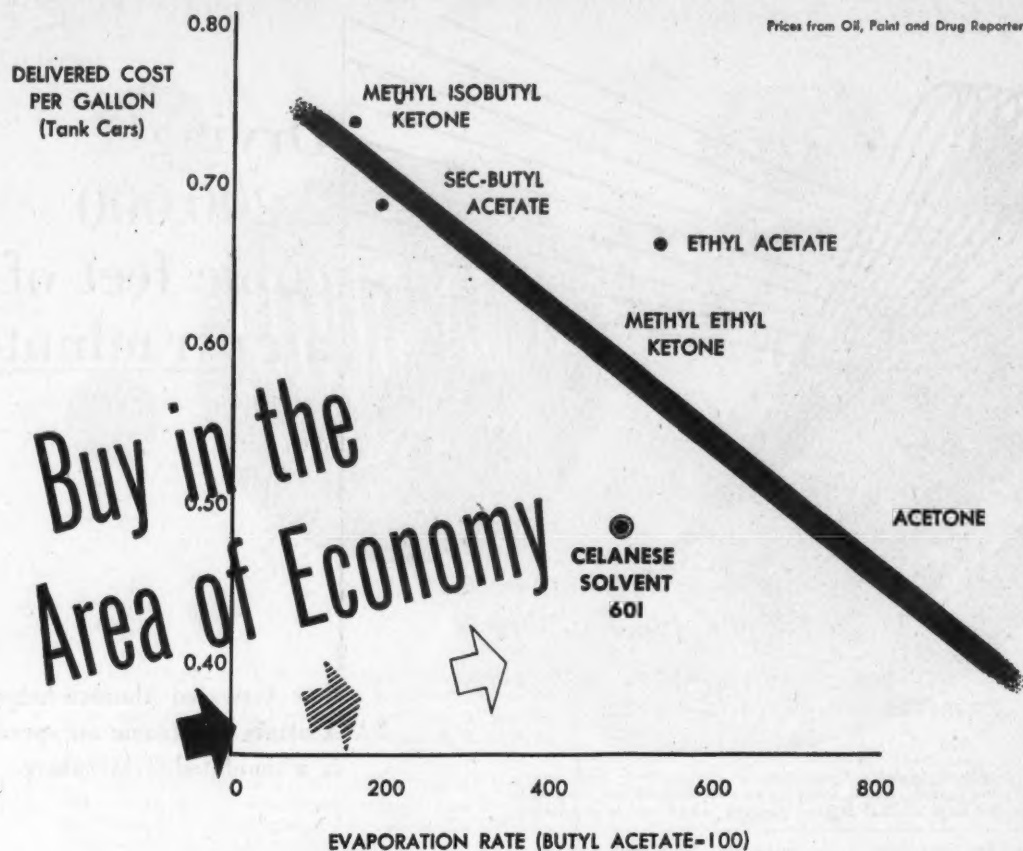
Covers sodium, potassium, and ammonium dichromates, sodium and potassium chromate, and chromium trioxide (chromic acid). Comprehensive bibliography is included. Serial No. 56, issued by the Mutual Chemical Company of America, Dept. CP, 270 Madison Ave., New York 16, N. Y. When inquiring specify CP 6610 on handy form, pages 2 and 3.

### Comprehensive information on hydrogen peroxide

Physical properties, reactions (organic and inorganic), and applications for hydrogen peroxide are related in descriptive booklet. Hydrogen peroxide solutions of 27.5, 35, and 50% concentration are discussed.

Information on engineering materials, shipping containers, analytical methods, and physiological properties is also included. "Hydrogen Peroxide," issued by Buffalo Electro-Chemical Company, Inc., Dept. CP, Station B, Buffalo 7, N. Y. When inquiring specify CP 6611 on handy form, pages 2 and 3.

MARCH, 1950

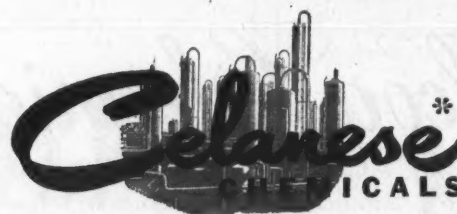


## CELANESE\* SOLVENT 601

It is no longer necessary to pay premium prices for an active solvent in order to get the evaporation rate you require.

Look at this chart. It shows the cost as a function of evaporation rate of five active solvents commonly used in nitrocellulose and other lacquers, and vinyl coatings. Inside the curve—in the area of economy—you'll find Celanese Solvent 601.

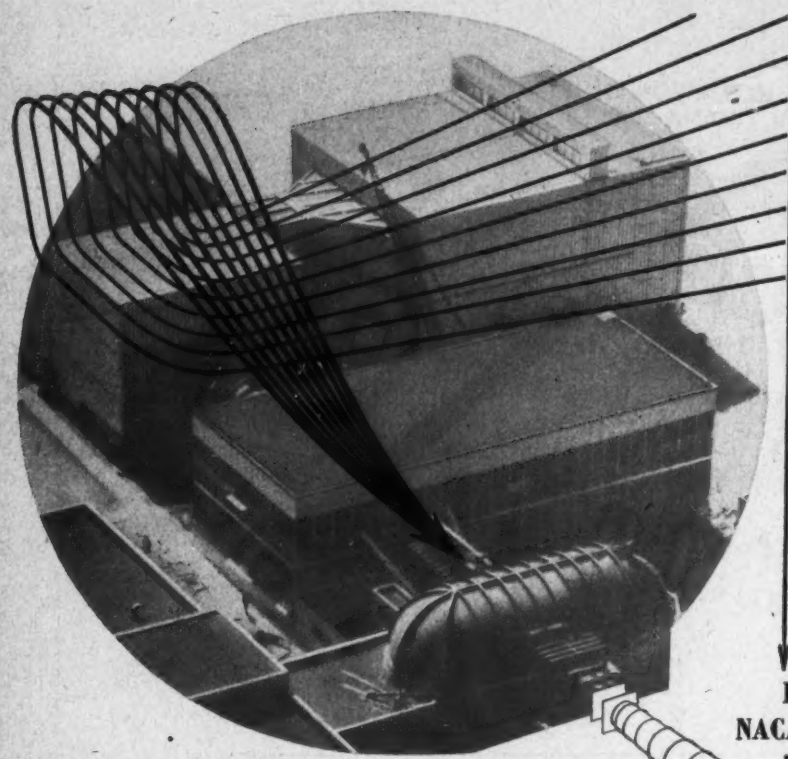
Celanese Solvent 601 can give you savings up to 16¢ per gallon. Substantial savings can also be made by supplementing the solvent power of methyl ethyl ketone with the cyclic oxides of Celanese Solvent 601. Call or write for prices and other technical information. Celanese Corporation of America, Chemical Division, Dept. 55-C, 180 Madison Ave., New York 16, New York.



\*Reg. U. S. Pat. Off.

ALCOHOLS • ALDEHYDES • ACIDS • GLYCOLS • KETONES • PLASTICIZERS • SOLVENTS

When inquiring check CP 6612 on handy form, pgs. 2-3



The National Advisory Committee for Aeronautics' giant supersonic wind tunnel. Photo, taken before the enclosure was completed, shows the huge conical diffuser through which air is discharged.

**Drying  
2,200,000  
cubic feet of  
air per minute**

**How Activated Alumina helps  
NACA attain supersonic air speeds  
in a simulated stratosphere**

Supersonic speeds nearly twice the speed of sound—and stratospheric conditions normally met at 35,000 feet up—are now brought down to earth in the world's largest supersonic wind tunnel at Cleveland, Ohio.

To simulate supersonic speeds at 35,000 feet of altitude, as much as 2,200,000 cubic feet of air, per minute, must be blown through the titanic "horn" at the newest NACA aeronautical research laboratory. But this air also must be dried to a minus 10° F. dew point before it is passed through the test section of the tunnel—a problem heretofore never considered for such a huge quantity of air.

To obtain this dryness, the air is passed through gigantic beds of ALCOA Activated Alumina where moisture can be removed at the rate of 240 gallons of water per minute!

Activated Alumina is suitable as the drying agent, because it can be relied upon to maintain its form and properties even after an almost unlimited number of regeneration cycles . . . because it is chemically inert, non-toxic and does not swell, soften or disintegrate even when im-

merged in water. Then too, ALCOA Activated Alumina is available in the enormous quantities required.

Besides aiding research, ALCOA Activated Alumina also helps manufacturers make better products through reliable and efficient dehydration of liquids, vapors and gases. Its desiccating properties are used in the chemical, food, pharmaceutical and petroleum industries, in air conditioning and for the maintenance of transformer and lubricating oils.

If you have a drying problem, it will pay you to investigate ALCOA Activated Alumina. Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 606C Gulf Building, Pittsburgh 19, Pa.

**Alcoa Chemicals**



**ALUMINAS and FLUORIDES**

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS  
ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM  
ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 6613 on handy form, pgs. 2-3

## MATERIALS

### **Explains synthetic detergents in non-technical manner**

Synthetic detergents are featured in a 2-color folder designed to acquaint the layman about these products in non-technical language.

Folder defines synthetic detergents. Explains the need in insect and weed killers and institutional cleaning.

Discusses 3 general types of synthetic detergents — anionic, cationic, and non-ionic — with the advantages of each. Includes an easy-to-read chart which gives the name, type, family, and uses of 19 surface active agents.

"Synthetic Detergents — Their History and Applications" is issued by Antara Products, General Aniline & Film Corp., Dept. CP, 444 Madison Ave., New York 22, N. Y. When inquiring specify CP 6614 on handy form, pages 2 and 3.

### **Improves flexibility of phenolic laminating varnishes . . .**

meta-substituted phenol mixture available in unlimited quantities

**Uses:** For improving flexibility of phenolic laminating varnishes; for increasing impact resistance of phenolic molding resins.

**Features:** Available in unlimited quantities, it is reported.

**Description:** Cardolite 1679 (Hydrogenated Cashew Nut Shell Liquid) is a dark brown, waxy solid consisting of a mixture of various meta-substituted phenols. Composition is as follows:

3-pentadecyl phenol	40 to 55%
5-pentadecyl resorcinol	5 to 10%
polymers of these phenols	25 to 40%

Melting point lies between 35 and 40° C; boiling range is between 185 and 250° C at 4 mm. Specific gravity is 0.96 to 0.98. Material is insoluble in water; slightly soluble in dilute sodium hydroxide; and completely soluble in hydrocarbons (aliphatic and aromatic), alcohols, and all common organic solvents. Its reactions include ether formation, ester formation, halogenation, and formaldehyde condensation.

**Source:** Samples available from Irvington Varnish and Insulator Company, Dept. CP, Irvington 11, N. J. . . . or for more information check CP 6615 on handy form, pages 2 and 3.

### **Hollow-cylinder form of maleic anhydride melts, dissolves easily . . .**

resistant to dusting, is easy to handle in plant

**Uses:** Raw material for production of maleic resins from which varnishes and lacquers may be prepared. Also modifier for drying oils, and intermediate in copolymerizations.

**Features:** New physical form — small hollow cylinders approximately 1-3/4" in length, 1-1/4" outside diameter, and 1/4" inside diameter. Presentation of large surface area permits rapid melting and dissolving. Anhydride is resistant to dusting; is easy to handle in normal plant operations.

**Description:** Material has a minimum purity of

CHEMICAL PROCESSING



## MATERIALS

99.0% maleic anhydride; melts at 52.2°C. Hollow cylinder form is shipped in fiber drums holding 275 lbs (net).

Physical properties, application information, and chemical reactions of maleic anhydride are treated at considerable length in manufacturer's 7-page bulletin, "Maleic Anhydride".

**Source:** Carbide and Carbon Chemicals Division, Union Carbide and Carbon Chemicals Corporation, Dept. CP, 30 East 42nd St., New York 17, N. Y. . . . or for more information check CP 6616 on handy form, pages 2 and 3.

### Inhibit mold growth, modify resins, formulate inks with propylene glycol-1,2 . . .

exhibits mutual solvency for water and many organics, is non-toxic

**Uses:** Effective for inhibiting mold growth and sterilizing air in conditioning systems. Recommended as preservative for pharmaceutical and medicinal products.

Useful as an esterification agent or modifying additive in resin production. Suitable for printing ink formulations, both heat-set and steam-set techniques.

Miscellaneous uses include: hydraulic fluids, permanent anti-freeze, coupling and blending agent for certain cosmetics, additive for controlling moisture content of packaging materials.

**Features:** Propylene glycol exhibits mutual solvency for water and many organics, is non-toxic.

**Description:** Propylene glycol-1,2 is a water-white, practically odorless fluid boiling at 188.2°C. Specific gravity is 1.0362, pour point -59.5°C.

Additional information on this product is available in maker's Bulletin N-18-1.

**Source:** Celanese Corporation of America, Dept. CP, 180 Madison Ave., New York 16, N. Y. . . . or for more information check CP 6617 on handy form, pages 2 and 3.

### Usefulness of many containers extended by polyethylene coated paper . . .

lined cases, bags, barrels, and boxes used for bulk packaging of chemicals

**Uses:** For case, bag and barrel liners in both flat and creped form. Also for envelopes, liners for corrugated boxes, and as pallet covers for outdoor storage. Can often take the place of burlap and other more expensive materials.

**Features:** Polyethylene plastic coating is odorless, tasteless, non-toxic, acid resistant, chemically inert, moisture-proof, grease-resistant, and can be heat sealed. It remains flexible at low temperatures.

A laboratory has been set up to handle research and development problems in the field.

**Description:** Paper is used as a backing for polyethylene. Coating paper with this film permits a reduction in the amount of plastic required for packaging. Thus a savings in the cost is obtained.

**Source:** W. Ralston & Co., Inc., Dept. CP, Old Bridge, N. J. . . . or for more information check CP 6618 on handy form, pages 2 and 3.



• While CITRIC ACID is one of the most widely used food acids in the pharmaceutical, food and beverage industries, modern chemical research continues to develop new and varied uses for this versatile acid and its derivatives.

CITRIC ACID contains a total of four reactive groups. With these readily substituted radicals, just consider the large number of related but chemically different compounds that can be synthesized!

Esterify the carboxyl groups of CITRIC ACID with one or more alcohols and you obtain a group of valuable plasticizers that are basic raw material for the fabrication of synthetic plastics.

React CITRIC ACID with a variety of bases and you can make normal or acid salts now being widely employed to condition water, and to clean and polish metals.

Subtract a molecule of water or carbon dioxide from CITRIC ACID and you get unsaturated dibasic or tribasic acids which on hydrogenation form new compounds extremely resistant to oxidation.

#### THE SALTS AND ESTERS OF CITRIC ACID

shown in the table to the right are all produced by Pfizer. The uses listed may suggest other applications worthy of your investigation.

PFIZER CITRIC ACID is available as the hydrate or U.S.P. preparation and as ANHYDROUS CITRIC ACID. The latter chemical is identical in purity to CITRIC ACID U.S.P. but contains no water of crystallization. *For the latest technical information on this versatile chemical building-block write today to our Technical Service Department. Chas. Pfizer & Co., Inc.; 630 Flushing Avenue, Brooklyn 6, N. Y.; 425 N. Michigan Ave., Chicago 11, Illinois; 605 Third Street, San Francisco 7, California.*

#### NEW FIELDS OF USE FOR CITRIC ACID AND ITS DERIVATIVES

	FIELD	USE
Citric Acid	Cleaning and Plating of Metals	Electrolytic polishing of stainless steel.
Ammonium Citrate Dibasic	Cleaning and Plating of Metals	Removes rust and scale.
Sodium Citrate	Water Conditioning	Sequesters metallic contaminants.
Calcium Citrate	Construction	Slows the setting of cement and plaster.
Triethyl Citrate Tributyl Citrate Acetyl Triethyl Citrate Acetyl Tributyl Citrate	Plastics Industry	Plasticizers for a wide variety of synthetic plastics.
Itaconic Acid (Citric Acid less $\text{CO}_2 + \text{H}_2\text{O}$ )	Paint and Varnish Industry	Shortens reaction time, gives harder finishes, improves color, shortens baking time of oil modified alkyds.
Itaconic Acid	Plastics Industry	Condensed with glycols or simply esterified, may be polymerized to form clear hard plastics.
Aconitic Acid (Citric Acid less $\text{H}_2\text{O}$ )	Plastics Industry	For preparation of synthetic resins and plasticizers.
Tributyl Citrate	Textile	Anti-foaming agent.



# PFIZER

Manufacturing Chemists for over 100 Years

When inquiring check CP 6619 on handy form, pgs. 2-3

IT'S HERE

CARBIDE'S High Purity

MALEIC ANHYDRIDE



NOW COMMERCIALY AVAILABLE

for Modified Drying Oils  
Polymers and Copolymers  
Alkyd-type Resins  
Surface Active Agents

CARBIDE AND CARBON  
CHEMICALS DIVISION

UNION CARBIDE AND CARBON CORPORATION

30 E. 42nd St., New York 17  Offices in Principal Cities  
In Canada: Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 6620 on handy form, pgs. 2-3

We "challenge" you to give  
PENN-DRAKE white oils the works!



Accept our sample, then  
turn loose your most critical  
chemist and let him do his  
damndest.



Try to find some trace of  
acids, alkalis or other im-  
purities.



Try to find some trace of  
odor, color or taste.



Compare its blendability,  
penetrating power and affini-  
ty with that of the product  
you now are using.



Check your findings against  
U.S.P. specifications or  
against any other standard  
for purity.



Add up the score, and then  
compare the cost, and you  
will see you should be using  
these white oils as the base  
for your products!

May we send our sample?



PENNSYLVANIA REFINING COMPANY  
BUTLER, PENNSYLVANIA

Branches: Cleveland, Ohio and Edgewater, N. J.  
Representatives in all Principal Cities

When inquiring check CP 6621 on handy form, pgs. 2-3

## MATERIALS

Molding 10-30% faster with  
externally lubricated  
polystyrene . . .

lower molding temperatures and  
pressures reported, too

Uses: Externally lubricated poly-  
styrene for special molding jobs.

Features: According to tests,  
easier flow of the lubricated product  
in many cases will make possible a  
ten to thirty percent faster molding  
cycle, lower molding temperatures and  
lower molding pressures.

Low bulk factor of the lubricated  
material results in greater utilization  
of the rated cylinder capacity of mold-  
ing machine. In most instances it is  
unnecessary to use a mold-release com-  
pound with the lubricated polystyrene.

Description: All three types of  
manufacturer's polystyrene (3, 7 and  
8) are available with external lubrica-  
tion. They are made in standard  
colors. The externally lubricated types  
are to be known as 31, 71 and 81.

Field tests with intricate molds, re-  
quiring good flow and mold-release  
properties, have been successful.

Source: Manufactured by Kop-  
pers Company, Inc., Dept. CP, Pitts-  
burgh 19, Pa. . . or for more in-  
formation check CP 6622 on handy  
form, pages 2 and 3.

Titanium tubing resists  
corrosion . . .

light-weight welded product is  
commercially pure

Uses: For applications where  
light weight and high corrosion-re-  
sistance are important factors.

Features: Commercially pure.

Description: Weldrawn welded  
and cold drawn titanium tubing is  
available in limited quantities. Anal-  
ysis limits (tentative) are:

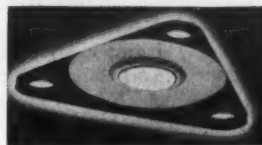
Titanium	99.5 min
Iron	0.15 max
Silicon	0.15 "
Magnesium	0.10 "
Manganese	0.10 "
Nitrogen	0.15 "
Oxygen	0.20 "
Carbon	0.05 "

Three standard tempers are being  
offered — annealed, half hard and  
hard drawn. Representative mechan-  
ical properties of annealed tubing  
are: ultimate strength — 80,000 psi  
max; yield strength — 40,000 psi  
min; elongation in 2" — 25% min;  
Rockwell B hardness — 95 max.

Sizes range from 3/4" x 0.049" wall  
to 1/8" x 0.010" wall. Heavier wall

New plastic inert to practically all chemicals,  
serves up to 500°F.

Du Pont "Teflon"® tetrafluoroethylene resin  
superior to all other materials for gaskets  
and packings in chemical resistance, also  
has outstanding electrical properties.



Uses: Gaskets, pump and  
valve packings; electrical in-  
sulation for motors, genera-  
tors, conductors, and for high-  
frequency, high-temperature  
and high-voltage wires and  
cables.

Features: "Teflon" is inert to all chemicals except molten  
alkali metals and fluorine under extreme conditions, has  
zero water-absorption, withstands temperatures ranging  
from -90°F. to 500°F., has an extremely low coefficient of  
friction. Tough, flexible "Teflon" outlasts other gasket  
materials up to 25 times and other packing up to 300 times!  
For electrical uses, it has a low dielectric constant (2.0)  
and a power factor of 0.0005. Both are constant over the  
entire frequency measured to date—60 cycles to 30,000  
megacycles.

Description: "Teflon" is available in sheets, rods, tubes,  
tape, molding powder and suspensions, which, on evapo-  
ration, yield continuous film. On request, Du Pont will  
recommend molders or fabricators of finished parts. For  
further information and booklet, "TEFLON in Gaskets  
and Packing," write to—

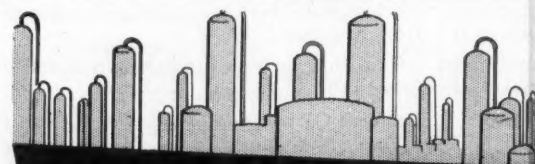
Source: E. I. du Pont de  
Nemours & Co. (Inc.), Poly-  
chemicals Dept.—Plastics  
Sales, 9523-A Nemours  
Bldg., Wilmington 98, Del.



BETTER THINGS FOR BETTER LIVING  
... THROUGH CHEMISTRY

(Advertisement)

When inquiring check CP 6623 on handy form, pgs. 2-3



PROTECT TANKS & PIPES  
with McDOUGALL-BUTLER  
PAINTS

Hardcote 4-Hour Dry

Here's the quick-drying gloss finish that  
resists water, alkalis, chemical fumes and  
weather. Used by many leading chem-  
ical processing plants for protecting large  
and small tanks located both inside and  
outside. Bright, lasting Hardcote colors  
also ideal for pipe line identification,  
safety area markings and other surfaces.  
Send for complete information today!



McDOUGALL-BUTLER CO., INC.

BUFFALO, NEW YORK

Branches: Auburn, Maine; Washington, D. C.; Salem, Mass.

When inquiring check CP 6624 on handy form, pgs. 2-3

CHEMICAL PROCESSING





*The most versatile  
and efficient defoamer  
on the market*

**Dow Corning**

MIDLAND • MICHIGAN

Write Dept. G today  
for free sample

When inquiring check CP 6625 on handy form, pgs. 2-3

## Corrosion Proofing

IN SOME OF AMERICA'S LARGEST PLANTS

- \* "Prufcoat on floors and pump supports in sulfuric acid concentration plant — no failure after more than three years."
- \* "Entire concrete building coated with Prufcoat — no trace of failure due to blistering, peeling or chipping in over five years."
- \* "Prufcoat on concrete piers and steel beams subjected to muriatic acid fumes — no deterioration in over six years."

\* Actual Prufcoat reports. Names of these plants upon request.



The Prufcoat film formed after polymerization has virtually a zero acid number, saponification number and water absorption rate.

In case after case, in leading industrial plants throughout the country, Prufcoat has stopped profit-eating corrosion and cut painting maintenance costs — often as much as 70%. Write for Typical Prufcoat Protecto-graph, showing actual cost comparison between painting with Prufcoat and conventional paints. Or better still, pick the toughest corrosion area in your plant, apply Prufcoat, and see for yourself the amazing results. Remember: Prufcoat *saves* more because it *protects* more. Prufcoat Laboratories, Inc., 63 Main St., Cambridge, Mass.



**SPECIFICATIONS**

- ✓ Acid Proof
- ✓ Alkali Proof
- ✓ Alcohol Proof
- ✓ Oil Proof
- ✓ Water Proof
- ✓ Flame Proof

**Applies Like Paint to Masonry, Metal, Wood**

When inquiring check CP 6626 on handy form, pgs. 2-3

MARCH, 1950

## MATERIALS

thicknesses and a line of seamless tubing will probably be offered eventually.

**Source:** Made by Superior Tube Company, Dept. CP, Norristown, Pa. . . or for more information check CP 6627 on handy form, pages 2 and 3.

### Harden stainless alloy at low temps . . .

corrosion resistance comparable to that of 18-8

**Uses:** Alloy is recommended for fabrication of pressure tanks, diaphragms and discs, all types of springs, conveyor parts, clips, washers.

**Features:** Corrosion resistance closely approaches that of 18-8 stainless; strength and hardness are equal to those of high carbon spring steels. Can be hardened by a low temp heat treatment. Fabricating properties are good.

**Description:** Designated as 17-7 PH, this stainless steel is available in soft and hard temper flat-rolled products, as well as hard and extra-hard temper wire. Precipitation-hardening, the alloy can be heat treated at relatively low temps. Such treatment is simple, economical; does not cause heavy scale formation, warping or decarburization.

Soft temper plate, sheets, and strip can be severely formed having elongation of 20-40%. Can be satisfactorily drawn; welded by resistance, metallic-arc, shielded-arc methods. Weld efficiencies after hardening average better than 90%. Tensile strengths to 205,000 psi, and Rockwell hardness of C40-45 are obtained by heating to 1400°F for 30 min and re-heating to 900-950°F for 30 min.

Hard temper sheet and strip approach fabricating characteristics of Type 301 full-hard-temper stainless steel. Alloy can be blanked, punched, flanged, and dished to some degree in this condition. After fabrication, strength and elastic properties are obtained by heating to 900°F for 1 hr, and subsequent air or furnace cooling.

Hard temper 17-7 PH wire has good forming properties — can be wrapped on its own diameter. Full hardness is developed after forming by heating to 850°F for 4 hrs (minimum) and air cooling. Properties are then comparable to those of best carbon steel music wire.

**Source:** Product of the Armco Steel Corporation, Dept. CP, Middletown, O. . . or for more information check CP 6628 on handy form, pages 2 and 3.

## Quality FINE CHEMICALS

### ALLYL AMINE • $\text{CH}_2=\text{CHCH}_2\text{NH}_2$

(2 Propenylamine)

**PROPERTIES and REACTIONS:** Colorless to light yellow, volatile liquid . . . strong ammoniacal odor . . . sp. gr. 0.76 . . . boiling range 51°-52.5°C . . . refractive index 1.418 . . . miscible with water, alcohol and ether . . . soluble in chloroform . . . free from diallyl and triallyl amines. Very reactive due to the presence of double bond.

**USES:** Pharmaceutical intermediate in the manufacture of mercury diuretics; dyestuff intermediate; resin raw material; organic intermediate.

### ALLYL MERCAPTAN • $\text{CH}_2=\text{CHCH}_2\text{SH}$

(2 Propene-1-thiol)

**PROPERTIES and REACTIONS:** A colorless to light yellow liquid; strong garlic-like odor; sp. gr. 0.930; boiling range 67°-68°C; refractive index 1.470; miscible with alcohol and ether; insoluble in water. Polymerizes slowly on standing, with increase in color, refractive index, specific gravity and boiling range. **USES:** Garlic flavoring ingredient; pharmaceutical intermediate; resin raw material; vulcanization accelerator (Brit. Pat. 286,749); possible ingredient for cold processing rubber.

### DIALLYL SULFIDE • $(\text{CH}_2=\text{CHCH}_2)_2\text{S}$

3-(2-Propenylthio) propene

**PROPERTIES and REACTIONS:** Colorless liquid with strong garlic odor . . . sp. gr. 0.885 . . . boiling range 135°-139°C . . . insoluble in water . . . miscible with alcohol and ether.

**USES:** Garlic flavoring ingredient, resin raw material, rubber processing chemical.

The above materials are available in commercial quantities.

Other Allyl compounds can be supplied in research quantities.

**EDWAL**  
LABORATORIES, INC.

Write for working  
samples and price  
quotations.

Plant and Office . . .  
RINGWOOD, ILLINOIS

When inquiring check CP 6629 on handy form, pgs. 2-3

## Switch Heavy Materials from Inside to Outside Storage; Save 17,000 Sq. Ft. of Plant Area for Manufacturing



**Fleet of fork lift trucks move tanks, tank heads, stainless sheet, and blast sand to and from inside and outside storage points**

« Truck's sensitive hydraulic control permits precise positioning of reactor section in furnace for fusing of glass lining »

One man stacks process unit heads outdoors with » 6000 lb truck, saving valuable plant space

It removes spent sand and brings new sand as it is required. Thus, an additional 1000 sq. ft. of space in vital production section is released.

Use of a heavy duty truck equipped with pneumatic tires has simplified and speeded up the moving and spotting at outside storage area of the largest and heaviest parts such as tank heads.

The fourth fork lift truck was put to work as a furnace charging machine. Utilizing special clamping attachments, truck is able to pick up tanks at any point within the plant and place them properly in the furnace to fuse the glass linings. This replaces the overhead charging machine operating on a track and involving additional handling by overhead crane.

**Results:** In three departments alone a total of 17,000 sq. ft. of floor space has been released for manufacturing.



Another department saved 75% of its floor space for better material handling. In 2 departments alone, 10 men formerly needed entirely for material handling are now serving in other productive jobs.

Outside storage at some distance from plant has become an asset as speed in handling materials from storage area to production made the distance negligible.

**Source:** Fork lift trucks described are built by Towmotor Corp., Dept. CP, 1226 E. 152nd St., Cleveland, Ohio . . . or for more information check CP 6630 on handy form, pages 2 and 3.

**PROBLEM:** Moving a vast amount of heavy materials and large parts from inside to outside storage was a difficult job that confronted the Pfaudler Company of Rochester, N. Y. This undertaking was absolutely necessary to provide additional plant space for production operations.

Manual methods of handling this work were prohibitive in cost, due largely to the long distances involved.

One situation that demanded increased plant space was the set-up for producing glass-lined tanks. These had to be handled by an overhead crane. Also, a charging machine operating on a fixed track moved tanks into furnace for fusing the glass lining. This required additional handling, and, as the greatest care and precision was essential in placing the work properly, there was occasional loss from damage to glass linings.

These tanks had to be stored in the area served by the crane and this encroached on space urgently needed for expanded manufacturing operations.

**Solution:** A fleet of 4 fork lift trucks was secured, each with special features and a different capacity. In one department, a 4000-lb capacity truck now moves palletized stainless steel sheet in and out of space formerly used for truck storage. These pallets are stacked high for maximum use of available space. Area formerly occupied by the sheets and adjacent to production is now freed for expanded manufacturing operations.

Another truck of 6000-lb capacity and equipped with solid rubber tires, speeds work in sandblast and enamel departments. Formerly 1000 sq. ft. of floor space adjacent to sandblast room had been used for sand storage for convenience in manual handling. This truck now makes practical the utilization of sand storage space 500 yards away.

## Move Corrosive, Inflammable Materials Safely in Non-sparking All-aluminum Trucks

**Inside surfaces are all smooth; entire unit is easily washed down and steam cleaned; does not absorb odors**

**USES:** Physical characteristics of aluminum make these units especially serviceable in handling operations involving exposure to acids. Dyeing and printing are typical fields of application. Also particularly suited for handling materials intended for human consumption.

**Features:** Lightweight, extremely mobile, non-magnetic, non-sparking. These trucks require no paint and will not rust, splinter or absorb odors.

**Description:** All-aluminum box-type truck. Frame is made of high-tensile aluminum alloy angles. Panels are



aluminum alloy sheet, riveted so that all inside surfaces are smooth.

Available in wide range of sizes to meet individual requirements. If desired, trucks are available with one or more sides hinged and completely collapsible for easy stacking.

Unit pictured measures 24 x 48 x 33" high. Weight is



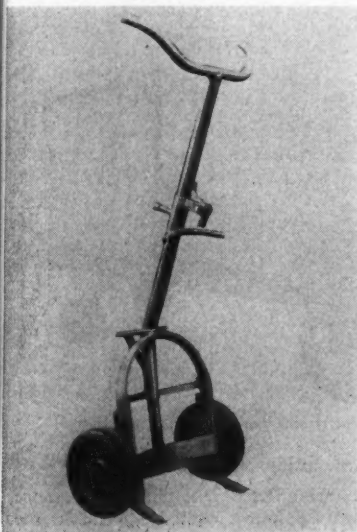
Easy rolling all-aluminum truck weighs only 95 lbs

95 lbs. This includes 5" Airlite wheels mounted in Aerol Casters.

Source: Tobey Mfg. Co., Dept. CP, 1221 El Segundo Blvd., El Segundo, Cal. . . or for more information check CP 6631 on handy form, pages 2 and 3.

### Wheels never leave floor when truck is used to pick up barrels . . .

unit weighs only 56 lbs., stands up by itself



Barrel truck stands by itself

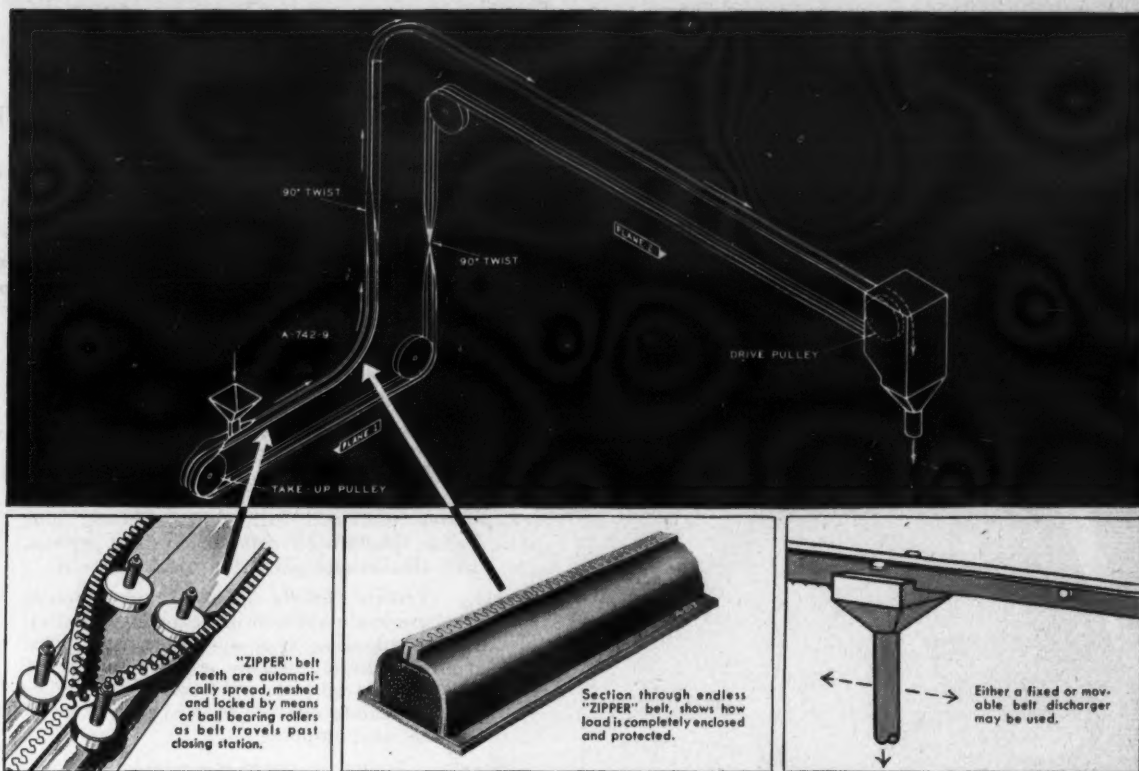
**Uses:** For quick, safe handling, loading, unloading and spotting of barrels by one worker.

**Features:** Truck stands by itself, eliminating problem of storage space usually involved in storing handling equipment. Wheels never leave the floor. Wheels and axles need never be lifted in loading barrel onto truck. Total weight is only 56 lbs.

### Description:

Unit is constructed entirely of steel, arc-welded for strength. It is available with selection of rubber-tired and semi-steel wheels.

Source: "Challenger" barrel truck is built by Modern Equipment Co., Inc., Dept. CP, 2007-11 Cuming St., Omaha 2, Neb. . . or for more information check CP 6632 on handy form, pages 2 and 3.



## "ZIPPER"—Has One "RUBBER MUSCLE" —As Flexible as a Hose!

"ZIPPER"—the new conveyor-elevator developed by S-A engineers, does the work of several conventional conveyor-elevators. But, with its one continuous "rubber muscle", "Zipper" does the same work, in less space, and with the elimination of extra drives, transfer spouts, casing, breakage and dust.

"Zipper" conveys horizontally, vertically or on inclines—in any direction and in any plane. Sidewalls are closed around the load to eliminate spillage and escape of dust as well as contamination from outside. "Zipper" moves around obstructions—carries its load gently without breakage or segregation.

Belt opens for complete discharge and cleaning when necessary. Speeds may be regulated up to 200 FPM. Pulverized, granular, lumps or flaky materials are particularly suited to "Zipper" application. This system is not only "flexible" in operation but also in its adaptability to many applications—probably including some problem of yours.

Ask for recommendations of S-A engineers on how new "Zipper" can serve you. There's no obligation so write today.

FOR EXAMPLE AT  
MANSFIELD SANITARY  
POTTERY, INC.  
PERRYSVILLE, OHIO

1" dry ball clay and other fine materials are drawn from storage silos and delivered to cylindrical underground dump hopper equipped with an S-A two-stage circular bin discharger. Materials are fed to "ZIPPER" belt conveyor which moves 32 feet upward, and makes a 90-degree turn to processing building. Over 95 feet of horizontal run over 5 mixing tubs, movable belt discharger can be spotted over any mixer. This S-A "ZIPPER" system fitted into existing layout without structural alterations.

**STEPHEN S-A DAMSON**

11 Ridgeway Avenue, Aurora, Illinois MFG. CO. Los Angeles, Calif. • Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

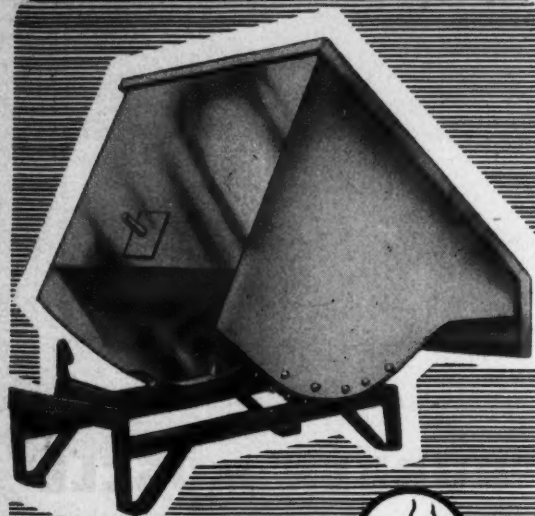
When inquiring check CP 6633 on handy form, pgs. 2-3

Use Self-Dumping Containers

**Reduce FATIGUE**  
WHILE YOU  
**Step Up PRODUCTION 50%**

WITH

**ROURA**  
**Stainless Steel**  
Self-Dumping **HOPPERS**



**EASY TO CLEAN**  
and **TO KEEP CLEAN**



**Only ROURA Has the Exclusive**  
**Instant Release (Patent Pending) Handle**

Especially designed for use in the Chemical Industry, these new ROURA STAINLESS STEEL Self-Dumping Hoppers are simple to operate. They are ideal for quick, safe and economical handling of corrosive materials—whether wet or dry, hot or cold. Labor and Time costs can be cut 50%—only one man is needed for distributing and unloading—and he does this in much less time than ordinarily required under old-fashioned manual methods. Thousands of Roura Hoppers (which fit any standard fork or platform lift truck) are in constant daily operation, serving and saving for such firms as Ford, Champion Porcelain, General Electric, National Carbon, International Harvester, etc.

By a simple lift of the exclusive release handle the ROURA HOPPER dumps, rights, and locks itself securely. Sizes— $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$  and 2 cubic yards, the ROURA HOPPER can also be designed for flat trucks and in other sizes to meet specifications. Also, it can be equipped with special flanges that permit stacking to desired tiers for storage or future distribution of materials—conserving valuable floor space. Priced below all competition, the ROURA will quickly pay for itself many times over.

Write today for detailed brochure, "You Can  
Save 50% Labor-Time."

**ROURA IRON WORKS, Inc.**  
1413 Woodland Ave. Detroit 11, Mich.

## Transport Bulk Materials in Weatherproof Bottom-hopper Dump Trailers

**Handle bulk materials usually requiring bagging;  
flow from unloading hoppers easily controlled**

**USES:** Developed for weatherproof bulk handling of granular and powdered materials and especially applicable to materials having high angle of repose. Simplify easy bulk loading, transporting and unloading of soda ash, many forms of lime, dry chemicals, fertilizers, nitrates, powdered coal, resins, cement, glue crystals, sulfur, phosphates, chlorine crystals, gypsum, stucco, malt, alkalies and plastic powders.

**Features:** Trailers quickly load through manhole openings that are weatherproof when closed. On arrival at destination, unloading is accomplished with equal ease. Bagging, packaging, usually required for protection of delicate materials, are not needed. Deliveries within practical hauling distance reduced to fraction of time of conventional shipping.

**Description:** Trailer illustrated is typical unit. Nominal length is 29'; width 96". Overall height with 10 x 20 tires (loaded) is 10' 6". Gross capacity is 30 cu. yds. Method of discharge is two 24 x 24" damper type bottom discharges. Loading facilities are two 24" circular loading manholes.

Trailers are equipped with Westinghouse air brakes.

Net weight of trailer illustrated is 11,080 lbs. It was designed to handle silica flour and can be loaded up to its 30 yd capacity in 3 min. Unloading time is 9 min.

These trailers lend themselves to use in trains. Basic



Trailer gives bulk materials weatherproof protection

units may be secured in any reasonable adaptation to suit specific requirements.

**Source:** Gramm Trailer Corp., Dept. CP, Delphos, Ohio . . . or for more information check CP 6635 on handy form, pages 2 and 3.

### Strengthen platform trucks with arc-welded frames, steel deck support . . .

units in range of sizes have hardwood decks

**Uses:** For rapid manual trucking of cases, boxes, parts and various unit loads.

**Features:** Arc-welded frames are 3 1/8" deep and of 10-gauge formed channel steel. Steel reinforcement runs entire length of deck for added strength and rigidity. Push handle sockets are inset-welded, forming smooth, rounded corners without sharp angles or projections.

**Description:** Available in four series and eight standard sizes. Decks in sizes from 24 x 48" to 36 x 72" are of 13/16" dressed paraffin-oil-treated hardwood. Upper top edge is rabbeted to allow flush fit of angle steel binding strip which is bolted to frame. This steel strip replaces screws or nails, binding deck and frame into a rigid, non-racking unit and protecting top edge and end-grain of deck.

Available in tilt and level types in capacities up to 2 tons, depending on running gear. Most models offer a choice of Durastan plastic, molded-on rubber or Nicro-steel wheels in a wide range of sizes to fit individual trucking jobs. Casters are available in several different types. Load wheels come equipped with roller bearings and pressure



Truck features steel frame hardwood-deck platform

grease gun lubrication fittings.

One inch pipe handles are offset 3" for pushing clearance, and held securely by two braces bolted to end frame. Trucks can also be furnished with straight or offset handles at each end, or with 36" straight pipe stakes. Frames and binder strips have baked-on green enamel finish and casters, handles and load-wheel hangers are tangerine enameled.

**Source:** Combination steel frame and hardwood-deck platform trucks are built by Rapids-Standard Co., Inc., Dept. CP, Grand Rapids, Mich. . . . or for more information check CP 6636 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

When inquiring check CP 6634 on handy form, pgs. 2-3



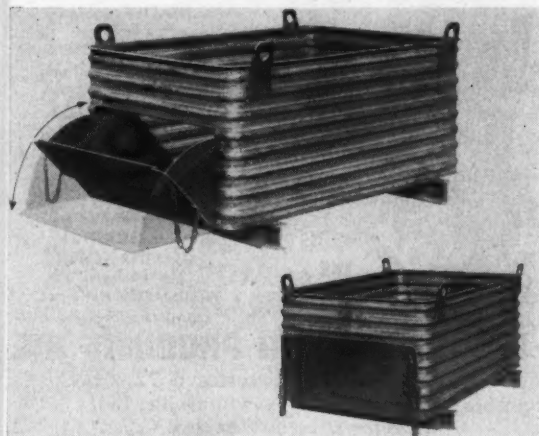
**Corrugated steel boxes  
tier easily; door gives  
access to contents . . .**

made to any dimensions and load capacity specified, including underneath clearance

**Uses:** For quick, easy movement and dispensing of bulk loads such as parts.

**Features:** Door eliminates removing tiered boxes when access to parts in lower boxes is desired.

**Description:** Boxes are built to desired specifications, including underneath clearance. Door may be opened to any set angle by means of chain, simplifying



Door permits easy removal of parts from tiered boxes

parts disposal by standing or sitting workmen. Crane lugs, stacking brackets and color of paint desired may also be specified.

**Source:** Palmer-Shile Co., Dept. CP, 16016 Fullerton Ave., Detroit 27, Mich. . . . or for more information check CP 6637 on handy form, pages 2 and 3.

**Lift, lower, move materials  
with elevating tables**

Line of movable elevating tables — employed for lifting, lowering, and transporting cumbersome materials and parts — is illustrated, described, and specified in 4-page, 2-color bulletin. Elevating platen is attached to 2-deck truck; offers 3 working surfaces. Lifting mechanism (crank and screw-jack principle) can be operated from either end of table. Largest of 3 sizes has load capacity of 5000 lbs., overall lift of 14". Features special equipment for tables.

Bulletin No. P-50, issued by The Hamilton Tool Company, Dept. CP, Ninth Street at Hanover, Hamilton, O. When inquiring specify CP 6638 on handy form, pages 2 and 3.

**Aid hand labeling with  
motorized gummer**

"How to Cut Labeling Costs in Half" is an eight-page booklet which describes the factors involved in the cost of hand labeling and the value of a motorized label gummer. On-the-job pictures plus figures show how four companies were able to effect savings in application time, label cost, equipment and material cost, and preparation and clean-up time.

Issued by King Sales and Engineering Company, Dept. CP, 210 First St., San Francisco 5, Cal. When inquiring specify CP 6639 on handy form, pages 2 and 3.

# Engineered for the Job!

Many Towmotor Fork Lift Trucks feature specially designed accessories **engineered for the job**—such as this revolving inverter device to "stir up" entire pallet loads of canned milk. There are many other Towmotor "firsts" developed to speed up every type of **Mass Handling** job . . . cut production time and costs . . . increase productive output. For more information, write for a copy of "Materials Handling Illustrated." Towmotor Corporation, Division 23, 1226 E. 152nd Street, Cleveland 10, Ohio. Representatives in all Principal Cities in U. S. and Canada.



**TOWMOTOR**  
THE ONE-MAN-GANG®

**FORK LIFT TRUCKS and TRACTORS**

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION



ASK TO SEE THE NEW TOWMOTOR MOVIE, "THE ONE MAN GANG," IN YOUR OFFICE



**WHAT IS YOUR PROBLEM?**

Whether it is milk or machinery, Towmotor engineers have the experience background to solve **your** materials handling problem. Take advantage of this creative service for any industry, any plant—large or small.

When inquiring check CP 6640 on handy form, pgs. 2-3

## 60% Saving in Man-Hours by ELWELL-PARKER Truck!

• Before purchasing this E-P fork truck, it required 20 man-hours at a grocery warehouse to unload and store 2000 cases of food. Now, with the Elwell-Parker, only 8 man-hours are needed... By tiering loads to the roof, the truck also permits maximum use of all floor space.

To learn about notable savings being made by Elwell-Parker trucks in over 300 different branches of industry, send for:—

**FREE BOOKLET** on *Scientific Materials Handling*. Ask for a copy of "Industrial Logistics".

### THE ELWELL-PARKER ELECTRIC COMPANY

4015 St. Clair Avenue

Cleveland 3, Ohio

When inquiring check CP 6641 on handy form, pgs. 2-3

## This THOMAS Truck made with many different STAKES, SHELVES, RACKS, BOXES, and HANDLES

How Thomas men help you "Job-Suit" trucks for your particular purpose: (1) Chassis is selected first. Kind and weight of average load and floor conditions determine platform size and wheel gear. (2) The superstructure that will handle your loads most efficiently is then chosen. Thomas has over 1000 supers (handles, boxes, shelves, etc.) cataloged for easy selection. Thomas "Job-Suited" trucks cost no more but you get more out of them because—they suit your job. Catalog and prices on request.



### THOMAS "JOB-SUITED" TRUCK

Series 3400 hardwood platform truck with round corners. Made in 10 sizes. Illustrated above with type A superstructure. Tubular steel push handle 40" above floor. Moulded-on rubber tired wheels, Hyatt bearings. Thomas makes many other types of 2 and 4 wheel trucks, casters and wheels. Write for catalog. Representatives in principal cities

THOMAS TRUCK AND CASTER CO.

511 Mississippi River

Keokuk, Iowa

When inquiring check CP 6642 on handy form, pgs. 2-3

## MATERIAL HANDLING

### Stack items to ceiling with mobile elevator...

telescopic models operated electrically or by hand; have capacities from 500 to 5000 lbs

**Uses:** For stacking or loading racks of bags, boxes, sacks, bales, cartons, bundles, skid loads, box loads, pallet loads, crates, other packages.

**Features:** Utilization of overhead space reduces floor space needed for storage, lowers refrigeration or heating costs.

**Description:** Shown in photo is mobile telescopic elevator, operated by hand, piling crates to ceiling. Line of elevators includes hand and electric models with capacities from 500 to 5000 lbs, with any practical lifting height desired.

Units are discussed at greater length in maker's Bulletin 4951.

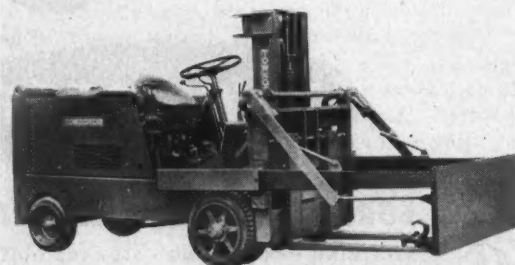
**Source:** Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago 9, Ill. ... or for more information check CP 6643 on handy form, pages 2 and 3.

### Handle dies safely, quickly in depositing them on table or removing them...

fork truck attachment has steel plate; also has hooks to hold chain used in pulling die off table

**Uses:** For safe, rapid unloading of dies from die handling trucks onto die tables. Dies are removed from table with equal ease.

**Features:** Unit is versatile, handling many types of



Pusher unloads dies; hooks hold chain for removing die from table dies, jigs and fixtures and placing them in position on various machines.

**Description:** Unloader is a special accessory. Illustration shows it attached to maker's Model LT-72 lift



Ceiling-high storage saves floor space, heating costs

## The "MASTER" Line OF MATERIALS HANDLING EQUIPMENT "Engineered to Save You Money"

Get This Latest L-S Bulletin  
Featuring Electric Power Fork Trucks

SEND FOR  
BULLETIN NO. 25



### CUT COSTS WITH The "MASTER" Line

SPACEMASTER Electric Trucks  
SPACEMASTER Gas Trucks  
(Fork Types)  
MASTER JACKSTACKERS  
JACKLIFT ELECTRIC Trucks  
MASTER JACKTRACTORS  
MASTER JACKLIFT Trucks  
MASTER QUICKLIFT Trucks  
MASTER REDILIFT Trucks  
MASTER SPEEDLIFT Trucks  
POWERMASTER Stackers  
SPEEDMASTER Stackers  
FLOORMASTER Trucks  
SHIPMASTER All-Steel  
2-Wheel Trucks  
WELDMASTER Platforms  
LOADMASTER Racks

### LEWIS-SHEPARD PRODUCTS INC.

146 Walnut St., Watertown 72, Mass.

Midwest Plant: Crawfordsville, Ind.

Representatives in Principal Cities.

When inquiring check CP 6644 on handy form, pgs. 2-3

### Robins Super-Gyraloy Screen Cloth helps cut costs, boost efficiency

You name the screening job! Robins Super-Gyraloy Screen Cloth will help you do it more efficiently, more economically. Here's why!

**IT'S TOUGH!** Super-Gyraloy Screen Cloth is built to withstand more shock than any other screen cloth material.

**IT'S HARD!** Special alloy, oil-tempered wire makes this screen cloth harder, stronger than any other used for screen cloth.

**IT'S DUCTILE!** You can bend it around its own diameter without breaking it.

Why not let Robins Super-Gyraloy Screen Cloth help cut your screening costs, boost your screening efficiency? It's available in sizes ranging from 15-gauge wire, 1/8" opening to 5/8" rod, 6" opening. Write Robins for Bulletin No. 113-A.

## ROBINS SCREEN CLOTH

Robins Conveyors Division  
Hewitt-Robins Incorporated  
Passaic, New Jersey



When inquiring check CP 6645 on handy form, pgs. 2-3

CHEMICAL PROCESSING



# CLARK Attachments

Make the Clark Fork Truck  
"MANY MACHINES IN ONE"



## BARTEL DEVICE

For handling paper rolls—a core pin, hydraulically actuated, enters the top of the roll, and holds roll securely against a curved clamp-plate



## CRANE

For handling many large, unwieldy items unsuitable for forks and pallets; usually used with a chain



## ROTATING ROLL CLAMP

Picks up a roll in either horizontal or vertical position and rotates it to the other



## CLAMP LIFT

For handling a tier of boxes or cases, by gripping the bottom unit firmly between clamping arms



## SHOVEL

For easy pick-up and dumping of sand, cinders, gravel, coal, aggregate and other bulk material

USE THE  
COUPON  
to get Material  
Handling News  
worth reading

# CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS



CLARK EQUIPMENT COMPANY • Battle Creek 9, Mich.  
Please send items checked...without obligation  
☐ Condensed Catalog ☐ Material Handling News

NAME \_\_\_\_\_  
FIRM NAME \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

When inquiring check CP 6646  
on handy form, pgs. 2-3

## MATERIAL HANDLING

truck. In this instance it has a capacity of 8900 lbs at 25" load center and lift height of 72".

After being picked up and transported to press, die is deposited on table by extending steel pusher plate.

To pick up die from table, a length of chain is passed around it and linked to hooks at each side of pusher plate. By retracting unloader arms, die is pulled onto forks.

Source: Unloader is special development of Towmotor Corp., Dept. CP, 1226 E. 152nd St., Cleveland 10, Ohio . . . or for more information check CP 6647 on handy form, pages 2 and 3.

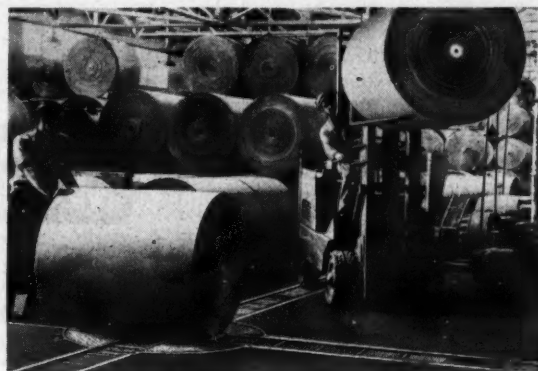
## Push heavy loads along roller-track, set flush in floor . . .

10' sections easily lifted out for cleaning or inspection; system includes turntables, angular turns

Uses: For conveying barrels, drums, large paper rolls, etc., at floor-level, either by rollers or motor-driven track.

Features: Heavy loads moved by one man without aid of caster-dollies or other equipment. Reinforced track, flush with floor-surface, permits trucking or foot traffic without damage or danger.

Description: Roller-track is laid in a floor-trench of 4" standard depth for hand-handled loads. Other depths



One man turns heavy paper roll on turntable of roller track. Loaded lift truck crosses track without damaging installation

can be furnished to suit conditions. Standard track sections are 10' long, and straight, although other lengths can be furnished to complete required transporting distances. Sections do not interlock; hence, any section can be removed for inspection or cleaning. Weight of sections permits handling by hand.

Curved track can be furnished for certain operating conditions. For abrupt directional changes, steel welded turntables rotate on inner and outer ball bearing mountings. Two or three-way "fan-tails," or angular turns, also permit directional changes for offset track requirements.

Lightweight aluminum-steel dollies, of suitable shape to accommodate intended loads, are essential units of this traction system. These roll along the roller-track as the load is pushed along by hand.

Source: Engineering Products Company, Dept. CP, 122 S. Michigan Ave., Chicago 3, Ill. . . . or for more information check CP 6648 on handy form, pages 2 and 3.

# Creative Package Design



## this de luxe corrugated prepak\*

Delivers goods to user factory-packed  
...conveys the impression of a quality product...is outstanding in display...is attractively printed in light brown ink on blue embossed board . . . identifies, describes, sells the product...features the maker's name...insures against damage...saves one-third in packaging costs. Apply package action to your product and increase sales. Consult Hinde & Dauch, Executive Offices, 5007 Decatur St., Sandusky, Ohio.

\*Reg. U.S. Pat. Off.

H&D®

HINDE & DAUCH  
Authority on Packaging

Write For The H & D 11-Volume "Little Packaging Library."

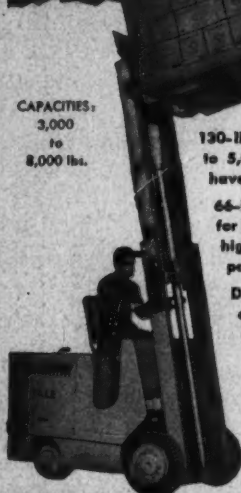


FACTORIES AND SALES OFFICES IN: Baltimore • Buffalo • Chicago • Cleveland • Detroit • Gloucester, N. J. • Hoboken, N. J. • Kansas City, Kan. • Lenoir, N. C. • Richmond, Va. • Sandusky, Ohio • St. Louis • Watertown, Mass. SALES OFFICES IN: Akron • Battle Creek • Cincinnati • Columbus • Denver • Erie, Pa. • Fairfield, Conn. • Findlay, Ohio • Greensboro, N. C. • Indianapolis • Miami • Minneapolis • Olean, N. Y. • Omaha • Philadelphia • Pittsburgh • Reading, Pa. • Roanoke, Va. • Rochester • Toledo • Worcester, Mass. IN CANADA, HINDE & DAUCH PAPER CO. OF CANADA, LTD.: Toronto • Montreal • Chatham • Calgary • Halifax • Hamilton • Kitchener • London • Peterborough • Quebec • Regina • St. John, N. B. • St. John's, Newfoundland • Vancouver • Winnipeg

When inquiring check CP 6649 on handy form, pgs. 2-3

# YALE *Lifting* telescopic electric fork truck

CAPACITIES:  
3,000  
to  
8,000 lbs.



130-INCH LIFT on 83" high models up to 5,000 lb. capacity. 68" high models have 100" lift.

66-INCH FREE LIFT on 83" high models for loading freight cars to capacity. 68" high models have 51" free lift for capacity truck and trailer loading.

**DRIVES LIKE AN AUTO**—Automotive controls and design make driving easier, safer, more comfortable than ever before.

**RUGGEDLY CONSTRUCTED** with hydraulic lift, hypoid drive power axle, Cam-o-factor control and welded heavy plate steel. Write for Bulletin 5151.

**YALE** THE YALE & TOWNE MANUFACTURING CO.  
Roosevelt Boulevard • Philadelphia 15, Pa.  
HAND LIFT AND POWER TRUCKS • HAND AND ELECTRIC HOISTS • INDUSTRIAL DIAL SCALERS

When inquiring check CP 6650 on handy form, pgs. 2-3

## Which of These **LIFT GATES** Will Cut Your Delivery Expense the Most?

For 8 years, thousands of operators have cut costs up to 50% with "LIFT GATES". Anthony has several types of "LIFT GATES" to make possible the most efficient, economical method of loading and unloading of all types of cargo on trucks and semi-trailers.

### ★ "GENERAL PURPOSE" TYPE

For quick, easy loading at curb, low dock and floor levels. Recommended for END loading at dock. "Levelized" lift keeps gate always horizontal to handle tall objects or loads on wheels, casters or rollers. Special non-slip surface. Choice of "SPRING" or Hydraulic Power closing.

### ★ "RAMP" TYPE

Popular for ground-level loading. Bulky objects easily push up low-angle permanent ramp for fast loading and unloading. Fast action "Levelizer". Special non-slip surface that doesn't impede loading by skids or hand truck. Choice of "SPRING" or Hydraulic Power closing.

### ★ "PICK UP" GATE

For 1/4 and 1/2 ton pick-up trucks. Twin hydraulic hoists lift up to 800 lb. loads. No cables, pulleys, cranks or chains. Operates from truck motor. Closes to act as a regular tailgate. Adds about 12% more pay load space. Phone or write for further information.



**ANTHONY  
LIFT GATE  
HYDRAULIC**  
T.M. REG. U.S. PAT. OFF.

**ANTHONY COMPANY, Dept. 401, Streator, Ill.**

When inquiring check CP 6651 on handy form, pgs. 2-3

## MATERIAL HANDLING

**Just turn on the water  
and dumper empties  
bags or drums . . .**

hydraulic cylinder of stainless steel unit uses little water; adjusts for slow or instant action

**Uses:** For labor saving hydraulic dumping of bagged materials; also liquids, syrups, brines or similar products handled in drums.

**Features:** Dumper's hydraulic cylinder operates from city water line and no motors, gears, chains or wiring are involved. Action is quiet, smooth, positive. Materials may be handled slowly and precisely or entire load may be dumped instantly.

**Description:** Entire unit is combined with a sturdy frame mounted on casters for rapid movement. Bags are easily placed in position and secured to stainless trough.



Hydraulic unit dumps bags or drums

Rods hold mouth of bag open and prevent bag from sliding down trough while being dumped. Drums of 54 gallon capacity or other containers are also easily attached to dumping trough.

Dumpers operate safely, avoid spillage and waste and save labor.

Trough is raised and lowered by means of hydraulic cylinder operated from city water line. Entire operation is controlled by one 4-way valve through which passes both the incoming water to the cylinder and return going to drain.

When the valve is opened, rising plunger carries the trough trunnions up the incline so that spout is over kettle or tank, and the trough is then raised to pouring position. When valve handle is reversed, trough returns to original position for reloading.

When dumper is to serve only one unit it may be used without casters, fastened to floor and permanently piped.

What is considered a standard unit is shown in illustration. Overall height with trough down is 57"; trough up 95"; floor space to operate is 28 x 72"; floor to pouring point 50". However, these specifications may be altered to suit requirements.

**Source:** Dumper is built by Lee Metal Products, Inc., Dept. CP, Philipsburg, Pa. . . or for more information check CP 6652 on handy form, pages 2 and 3.

**Year's rugged service imposes  
but slight wear on clutch  
of fork truck . . .**

uprights are mounted on extension of truck frame; front wheels are clear, easily changed

**Uses:** For handling a wide variety of loads up to 2000 lbs on standard forks or with special attachments. Cases, crates, bags, kegs, drums, rolls and sheets are moved, loaded, unloaded and stacked easily and quickly.

**Features:** Heavy-duty air-cooled 4-cylinder engine

**Screw-Lift**  
GIVES YOU COMPACT  
STREAMLINED MOVEMENT OF  
BULK MATERIALS

**TO ANY PLACE  
IN YOUR PLANT**

A Hammond Screw-Lift offers you a sure clean way of handling your bulk materials without contamination or exposure.

Essentially it is a Screw Conveyor operating within a tube, scientifically worked out to elevate material to any practical height. Feed is controlled, choking is impossible by patented construction. It offers a dust-tight, moisture-proof, sanitary system where free-flowing bulk materials are manufactured.

Write us for Form M-500-2 which will enable you to outline your problem.

**Screw Conveyor Corporation**  
699 HOFFMAN ST. HAMMOND, IND.  
TRADE MARK REG. PATENTED U.S. & CAN. OFFICE

When inquiring check CP 6653 on handy form, pgs. 2-3

## The Portable **MORSE ROTATOR**

THE NEWEST  
ADDITION  
TO 25 YEARS  
OF SUCCESSFUL  
MANUFACTURING  
EXPERIENCE



**SAVES TIME! SAVES LABOR!**  
SAFELY ROTATES UP TO 500 LBS. AT 10, 20 OR 40 RPM

A powerful, compact motorized unit that will cut costs of mixing, tumbling, cleaning, etc. Scientifically engineered for smooth, safe revolving. Can be loaded by ONE MAN and is easily moved. The power drive has a 3/4" dia. shaft and is equipped with self-aligning bearings. Four 4" dia. Neoprene drive wheels adjustable to take from 1 to 55 gal. cylindrical containers. Wt. before crating 137 lbs. Furnished with motor and gear reduction unit. Write For Complete Information.

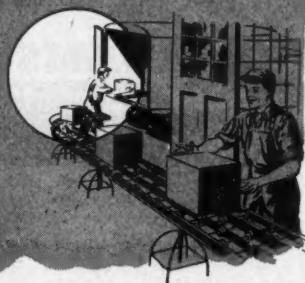
**MORSE MANUFACTURING CO. INC.**  
124 Dickerson Street Syracuse 2, N. Y.

When inquiring check CP 6654 on handy form, pgs. 2-3



Need "handling" help in

- SUB-ASSEMBLY
- WAREHOUSING
- PRODUCTION
- INSPECTION
- PACKAGING
- FINISHING
- RECEIVING
- SHIPPING
- STORAGE



PORTABLE  
ROLL-OR-WHEEL  
CONVEYOR

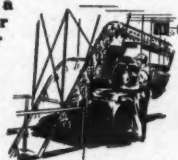
there's a Buschman  
Conveyor... for  
every production need

Wherever materials are moved, in packages, cartons, barrels, boxes, bags or in bulk, Buschman Conveyors are at work. In your plant, from receiving room to shipping, whatever the job, there's a Buschman Conveyor to fit your particular requirements.



"TROJAN"  
PORTABLE BELT  
CONVEYOR

Whatever your problem... simple or complex... bring it first to Buschman, for a practical solution. Write for General Catalog No. 400.



"UNIVERSAL"  
CABLE TROLLEY  
CONVEYOR

# Buschman Conveyors

THE E. W. BUSCHMAN CO., INC.  
Spring Grove & Clifton  
Cincinnati 32, Ohio

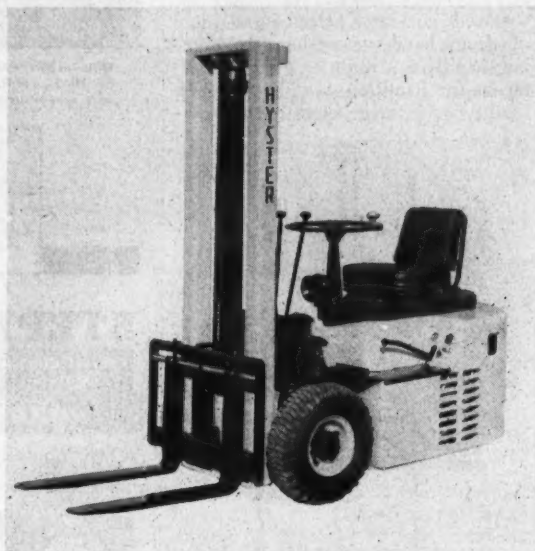
When inquiring check CP 6655  
on handy form, pgs. 2-3

## MATERIAL HANDLING

operates efficiently at very high and very low temperatures. Electric fuel pump is located near gas tank, eliminating possibility of vapor lock. Uprights are mounted on an extension of the truck frame rather than transmission case.

Heavy-duty clutch withstood tests of 212,000 total applications (106 applications per hour), with only slightest indication of wear.

Big diameter (6.00 x 9 — 10 ply rating) road lug tires give excellent traction. Steering is easy, only 6 lbs effort being required to turn 18" steering wheel.



1-ton truck has 4-cylinder air-cooled motor

**Description:** Capacities: 2000 lbs at 15" load center to 1500 lbs at 24" load center. Standard height of lift is 9' (optional heights 6, 7½ and 12'). Tilt 3° forward empty; 5° forward loaded; 11° backward empty; 9° backward loaded. Standard-length forks are 30" (optional lengths 36, 42 and 48"). Length less forks and tow hooks, 71".

Width overall is 37". Wheelbase is 45". Turning radius outside is 67"; turning radius inside is 11".

Maximum forward speed in high gear is 13.7 mph.

Control for hoisting and tilting mechanism is single lever type. Pump and oil capacity of hydraulic system provide for operating all attachments. Shipping weight of truck is approximately 3620 lbs.

**Source:** Hyster #20 lift truck is built by Hyster Company, Dept. CP, 2902 N. E. Clackamas St., Portland, Ore. . . or for more information check CP 6656 on handy form, pages 2 and 3.

### Various sizes, types of casters carry 140 to 400 pounds

Specifications of various diameters and types of casters, in load-capacities of 140 to 400 lbs, are listed in an illustrated catalog supplement. Literature also describes advantages of "cold-forged" process by which these casters are made.

Form Series 40, issued by The Rapids-Standard Company, Inc., Dept. CF, Dept. CP, 342 Rapistan Bldg., Grand Rapids 2, Mich. When inquiring specify CP 6657 on handy form, pages 2 and 3.

# Wouldn't your car look silly



# ...with a CHAIN DRIVE?

## HOW ABOUT YOUR LIFT TRUCKS?

Chain drives are as obsolete in lift trucks as in autos. To prove it, check your maintenance and downtime records. You'll find chain drive failures account for the greatest percentage of costs.

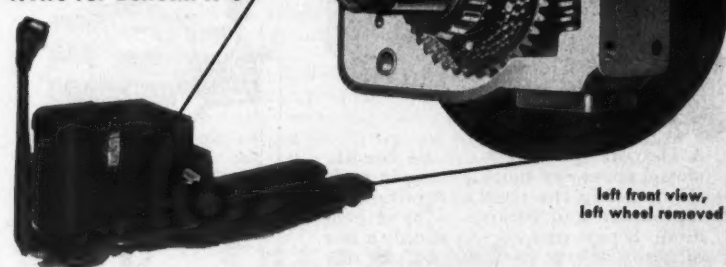
That's why W. C. Stuebing, founder of the lift truck system, builds true differential drive, the same as in your modern auto, into Hydroelectric Lift Trucks. With all gears and running parts sealed in lubricant this differential drive outlasts chains ten to one according to fleet owners reports.

Only Stuebing engineered Hydroelectric Lift Trucks give you this sealed gear drive plus four wheel stability, easy steering, twin front driving wheels.

Pallet models to 4000 lbs.; platform models to 6000 lbs.; specials in larger capacities; all with two speeds forward, two in reverse, dynamic brake, fingertip controls.

**Get the facts before  
buying another truck.**

**Write for Bulletin H-3**



left front view,  
left wheel removed

# LIFT TRUCKS INCORPORATED

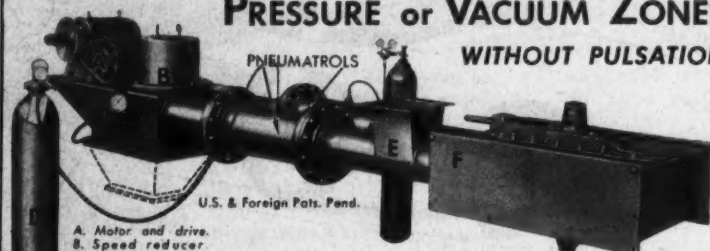
2425 SPRING GROVE AVE. • CINCINNATI 14, OHIO



When inquiring check CP 6658 on handy form, pgs. 2-3

# HAPMAN PNEUMATROLS

*Now* **CONVEY CONTINUOUSLY**  
INTO OR OUT OF  
**PRESSURE or VACUUM ZONES**  
**WITHOUT PULSATION**



U.S. & Foreign Pats. Pend.

A. Motor and drive.  
B. Speed reducer.  
C. Dotted lines indicate position of pressurized hopper in actual installation.  
D. Tanks supplied air source for actuating Pneumatrols in test set-up.  
E. Receiving hopper.  
F. Standard take-up for Hapman chain conveyor.

The restricted nature of most new processes prevents securing plant photographs of the Pneumatrol installations now operating successfully. Names will be furnished on request.

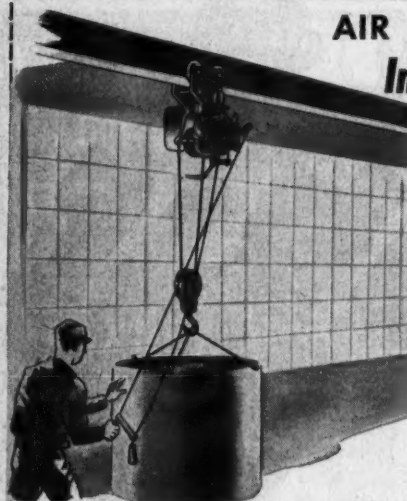
## HANDLE ANY FLOWABLE MATERIAL

This photo shows the testing set-up prior to shipping an installation of a Hapman circular flight chain conveyor equipped with Hapman Pneumatrols. The pressure-sealed Pneumatrols used with the Hapman pressure-tight, chain-link and flight assemblies, make it possible to convey any flowable material into or out of vacuum and pressure zones intermittently, continuously or it can be processed in motion through these zones. Complete information on request.

**HAPMAN CONVEYORS, Inc.** 2405-D W. McNichols Road  
Detroit 21, Michigan

When inquiring check CP 6659 on handy form, pgs. 2-3

## AIR HOISTS ARE BEST In Many Cases...

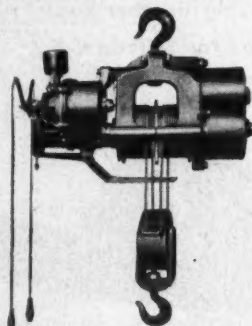


A Detroit Air Hoist can be readily moved about and quickly hung in position, saving the time and removing the burden and hazards of hand handling. It pays its own way if only a few minutes of one man's time per day is saved.

Fill in company name, address and send us this ad for a copy of Air Hoist Bulletin 700.

**DETROIT HOIST & MACHINE CO.**  
8216 Morrow St., Detroit 11, Mich.

Company \_\_\_\_\_  
Address \_\_\_\_\_



When inquiring check CP 6660 on handy form, pgs. 2-3

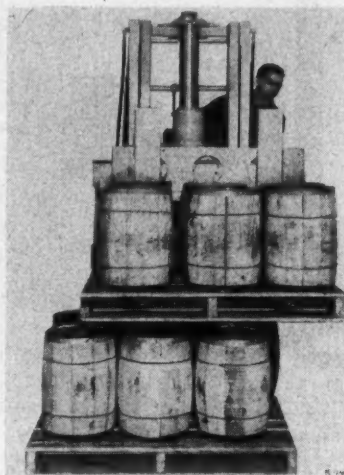
## MATERIAL HANDLING

**Easy to spot pallet loads close to wall or pillars with side-shifter...**

fork-truck device eliminates manual positioning in trailers, etc.

**Uses:** Side-shifts fork truck loads 4" to right or left of center, making it possible to "spot" loads in odd corners, close to walls, near pillars or in other confined areas.

**Features:** This side-shifter accessory is easily attached and may be removed quickly to permit installation of drum handlers, pushers, rotators, keg handlers, clamps or other attachments for handling a wide range of load-types in large quantities.



Shifts pallet loads 4" right or left

**Description:** Designed for use with two types of maker's trucks. For example, a side-shifter when used to shift pallet loads to either limit permits utilization of more than 11 additional cubic feet of space when a single stack of 40" long pallets is being tiered to a height of 10'.

**Source:** Side-shifter attachment is made by Yale & Towne Mfg. Co., Philadelphia Div., Dept. CP, Roosevelt Blvd. & Haldeman Ave., Philadelphia, Pa. . . or for more information check CP 6661 on handy form, pages 2 and 3.

**Resilient rubber tires of caster wheels assure smooth riding...**

free-wheeling, well-protected models do not develop shimmy

**Uses:** On various types of material handling equipment where rubber-tired caster is desired.

**Features:** Swivel fork has Timken bearings for ease in movement. No shimmy or wobble. Wheels have non-revolving side plates which keep foreign matter from entangling in

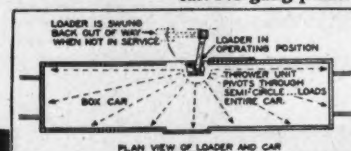
# SPEED

**LOADING AND TRIMMING  
BULK MATERIALS INTO  
BOX CARS WITH AN S-A  
SWIVELoader**



Write for SWIVELoader Bulletin No. 1046... or No. 240 on portable wheel mounted loaders.

Loose, granular bulk materials (up to 2" size) can be loaded and trimmed automatically with an S-A SWIVELoader in a fraction of the time required for hand loading. Centrifugal thrower unit, swung into position, discharges to all parts of car. One man can operate it part time without entering the car. No gang plank is required.



**STEPHENS-ADAMSON MFG. CO.**  
Tellevel-Bin Level Controls Car Loaders Saco Speed Reducers SealMaster Ball Bearings Car Pullers Winches  
**11 RIDGEWAY AVE., AURORA, ILLINOIS**

When inquiring check CP 6662 on handy form, pgs. 2-3

**"We want THIS BAKER TRUCK!"**  
said Taylor & Boggis Foundry Co.



**SO-WE SOLD THEM THE PILOT MODEL OF OUR NEW FT (100% FUNCTIONAL) FORK TRUCK WHICH HAD BEEN IN THEIR PLANT ON TEST**

This new, rugged, 3000-4000 lb. capacity electric fork truck was designed as a completely functional "work horse", to provide greater utility, safety and convenience, and to sell for less than any truck in its class.

For field testing we looked for the toughest operating conditions we could find, and selected a foundry where abrasive dust, congestion, heavy punishing loads, typical foundry floor conditions and continuous operation meant the most strenuous service ever asked of a truck. No industrial truck had been able to stand the gaff in this foundry.

But the Baker FT did! From the day it was installed, there was not one minute of down time! As a result, the company insisted on keeping this same pilot model.

Write us or ask your nearest Baker representative for details on the toughest, lowest-priced fork truck in its class.

**BAKER INDUSTRIAL TRUCK DIVISION of the Baker-Ranlang Company**  
1208 WEST 80th STREET • CLEVELAND 2, OHIO  
In Canada: Railway and Power Engineering Corp., Ltd.

**Baker INDUSTRIAL TRUCKS**

When inquiring check CP 6663 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## New... BEAUMONT "BEAUCALLOY" BUCKET ELEVATOR CHAIN



Beaumont "BEAUCALLOY" Chain cuts maintenance costs through great increase in service life. At present test installations these chains have been in operation more than twenty times longer than former malleable iron chain—and still show little sign of wear.

Besides utilizing Beaucalloy, a heat-treated alloy steel, Beaumont developed a new link design which provides additional metal on the barrel where wear occurs. In addition, the chain maintains almost steady contact during rotation on sprocket or traction wheel—reducing wear on barrel, pin and sprocket.

Write—without obligation—for data sheets or for our representative to call.



When inquiring check CP 6664 on handy form, pgs. 2-3

## It's New, Shorter



The  
Shorter Turn  
Pays Off!

THE MOTO-TRUC MOTORIZED BATTERY OPERATED WALKIE TYPE PALLET TRUCK has by far the most compact power unit. Operates in narrower aisles, an invaluable feature especially where space is at a premium.

HAS EASIEST AND SIMPLEST CONTROLS — all in easy grip roller type handle.

Made in 12-volt for level operation — 18-volt for ramp operation. WRITE FOR BULLETIN PAL-265

PALLET TRUCKS  
HI-LIFT TRUCKS  
PLATFORM  
TRUCKS

**The MOTO-TRUC Co.**  
1913 E. 59th Street  
CLEVELAND 3, OHIO.  
ORIGINATORS OF  
MOTORIZED HAND TRUCKS

UP TO  
15"  
SHORTER  
IN OVERALL  
LENGTH

When inquiring check CP 6665 on handy form, pgs. 2-3

MARCH, 1950

## MATERIAL HANDLING

wheels, protect wheel and bearing mechanism from dirt and moisture. Highly resilient, live natural rubber tire is securely bonded to wheel body under heat and pressure . . . cannot stretch or become loose.

**Description:** Casters are made in two general types — "Super Cushion" and "Super Duty". The first type has deep-cushioned tires that give the appearance of air tires. It is intended for applications where noise and vibration are undesirable, and where loads go up to 325 lbs per caster. Swivel and rigid types are made, with wheel diameters of 6 and 8" and carrying heights of 5, 6½, 7 and 8½".



Cutaway of caster shows Timken bearings in swivel fork and wheels. This is the Super Cushion type for very smooth riding

Super Duty casters have smaller tires and are for loads to 550 lbs per caster. They are also made with wheel diameters of 6 and 8". Carrying heights are 8¼ and 10¼". Available in swivel and rigid styles.

Wheel bearings are either Timken or ball. They are permanently lubricated and adjusted for the life of caster. They do not come loose or rattle.

Swivel fork is of high-tensile, unbreakable material. The two tapered Timken bearings of the fork are mounted on a high-tensile king pin.

**Source:** Manufactured by Roll-Rite Corporation, Dept. CP, 8th and Jefferson Sts., Oakland 7, Calif. . . or for more information check CP 6666 on handy form, pages 2 and 3.

### Describes white coating for reflecting surfaces

Synthetic, white coating for reflecting surfaces of lighting fixtures is described in technical bulletin. Tells how a high quality finish can be obtained by single-coat application and short baking cycle. Covers coating's durability, color retention, reflectivity, and chemical resistance. Mentions advantages derived from coating.

Bulletin is issued by Monsanto Chemical Company, Dept. CP, St. Louis 4, Mo. When inquiring specify CP 6666A on handy form, pages 2 and 3.

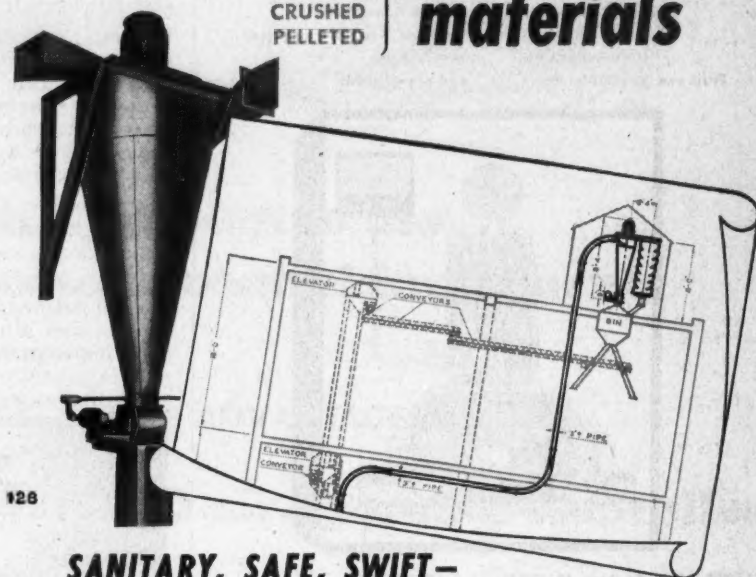
## SPROUT-WALDRON'S

# PNEU-VAC

THE MODERN AIR CONVEYOR SYSTEM

for handling  
bulk  
materials

POWDERED  
GRANULATED  
FLAKED  
GRATED  
CRUSHED  
PELLETED



SANITARY, SAFE, SWIFT—

SAVES time, labor, SPACE and MONEY

Pneu-Vac, the modern conveyor system, is rapidly changing the old concepts of bulk materials handling. Adaptable to almost any conveying situation, it replaces bucket elevators and screw conveyors, steps up production and provides sanitary products handling.

Specially engineered for individual processing needs, Pneu-Vac prevents the accumulation of materials within the system, eliminates dust, and improves working conditions. Because materials do not pass through fan blades, quiet operation and low maintenance costs are assured and costly breakdowns avoided.

Installation requires small space—if you have room for a conveying pipeline you can have Pneu-Vac in your plant.

Investigate how this up-to-the-minute system can modernize your bulk materials handling and greatly increase your operating efficiency. Write for Bulletin 18c.

Address Sprout, Waldron & Co., Inc.  
10 Waldron Street, Muncy, Penna.



**Sprout-Waldron**

Manufacturing Engineers

MUNCY, PENNSYLVANIA

Size Reduction • Mixing and Blending

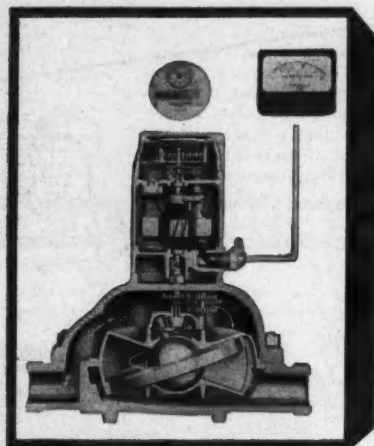
Bulk Materials Handling • Product Classification • Pelletizing and Special Facilities

When inquiring check CP 6667 on handy form, pgs. 2-3

# Now! INDICATE and CONTROL the flow of CORROSIVE LIQUIDS

## INCLUDING

Acetic Acid	Hydrogen Peroxide
Alum. Potassium Sulphate	Phosphoric Acid
Ammonia	Potassium Hydroxide
Calcium Compounds	Sodium Compounds
Carbolic Acid	Sulphuric Acid (concentrated)
Formaldehyde	Stearic Acid
Fruit and Vegetable Juices	and many others



## HAYS VERIFLOW METER and VERITROL

- The Hays VERIFLOW METER accurately measures the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks. It indicates the rate of flow at all times, without interruptions . . . at the same time totals every gallon on its register. With the Veriflow Meter you KNOW your liquid "Profit and Loss."
- With the HAYS VERITROL, you simply set a knob at the rate of flow desired . . . then, without hesitating or forgetting, the Veritrol controls the flow of liquid at that set-rate. This automatic control not only indicates and integrates liquid flow . . . it efficiently does something about it. Where liquids are involved, Veritrol helps you reduce losses from waste, minimize spoilage, save time and liquid.

Complete description of the Hays Veriflow Meter and Veritrol is available in Bulletin 48-766. It will pay you to send for your copy, today!

**The Hays CORPORATION**  
MICHIGAN CITY, INDIANA U.S.A.

THE HAYS CORPORATION  
Michigan City 12, Indiana

Please send me Bulletin 48-766 on the Hays Veriflow Meter and Hays Veritrol.

Name.....  
Firm.....  
Address.....  
City..... Zone..... State.....

When inquiring check CP 6668 on handy form, pgs. 2-3

## Fast, Accurate Operation Is Feature of Assembly for Radiation Study

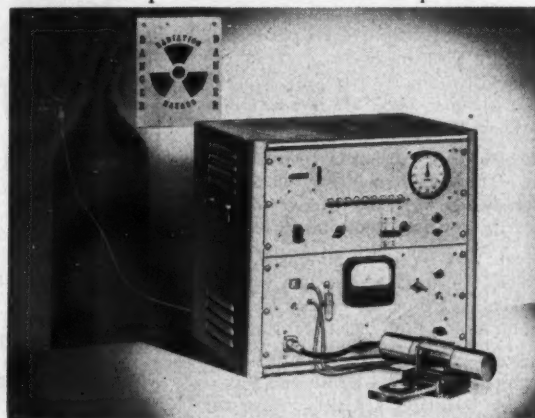
Contains all necessary equipment: counter, amplifier, equalizer, scaler, timer, gas supply, etc

**USES:** For counting alpha particles, or alpha, beta and gamma radiation. Unit contains all items necessary for basic radiation study.

**Features:** Counter tube operates in proportional region as differentiated from Geiger region. Resolution loss is less than 2% at 100,000 counts per minute, plateau is very long and flat, tolerance to air is many times greater than Geiger counter's, and chemical breakdown of gas is approximately 100 times less obnoxious than with Geiger counter tube.

**Description:** Complete assembly includes counter tube, high voltage supply, amplifier, pulse equalizer, scaling circuit, supply of gas and gas regulator.

Counter tube is available in either internal sample or external sample type. Internal type is used for counting samples with soft radiation and when sensitivity is of great importance. External type is used where variations in geometry of exposed sample are desired, as well as when absorption measurements are required.



Basic equipment for radiation study, with internal type sample counter

Counter tube is operated at 4300 volts from regulated supply. When only alpha radiation is to be counted, tube is operated at 3100 volts. High voltage is variable from 2200 to 5000 volts, permitting determination of counter tube characteristic curve.

Scaler is Higinbotham type, has scale of 512, with alternate selection of scales of 64, 128 and 256. Equipped with panel-mounted timer and register.

Gas is specially purified methane, is furnished through 2-stage regulator which shows delivered pressure and amount of gas remaining in cylinder.

Plateau length is 400-600 volts; slope is 0.5%/100 volts for internal type, 1 to 3%/100 volts for external type. Gas flow rate is not critical when counting; supply normally lasts 4 to 6 months.

Geometries available from external sample counter are 41, 19, 9, 5 and 3%; from internal, 50%. There is no window for internal sample counter tube. Two-inch diameter window of conducting aluminum foil is less than 2.5 mg per sq. cm. for external sample counter tube.

**Source:** Radiation Counter Laboratories, Inc., Dept. CP, 1844 W. 21st St., Chicago 8, Ill. . . . or for more information check CP 6669 on handy form, pages 2 and 3.

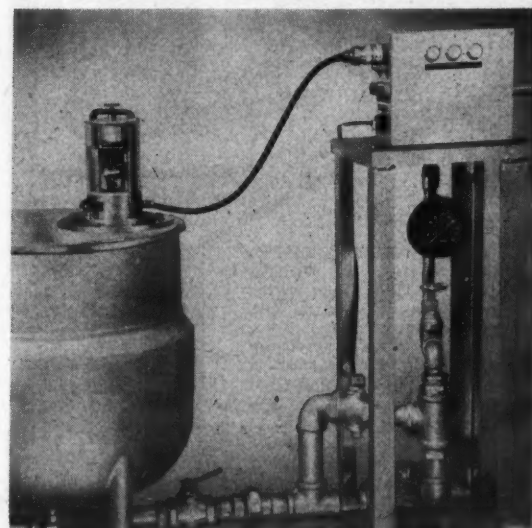
## Control of viscosity can now be made automatic, continuous . . .

rotational viscometer can be installed in vats, pipes, tanks; control signals are given every 6 seconds

**Uses:** For measuring viscosity of process liquids and automatically activating various means of controlling viscosity.

**Features:** Unit can be installed in tanks, vats, pipes, etc., and used to measure and control liquids of any viscosity between 2 and 50,000 centipoises. Instrument responds to any viscosity change within 1% of preset value.

Installation can be made on closed, open or pressure sys-



Viscosity controller mounted on kettle regulates volume of incoming liquid

tems, either directly in present equipment or in sample chambers or by-pass lines.

**Description:** Spindle is rotated in liquids being



blended, mixed, transported, etc., by synchronous motor through a permanently calibrated torsion spring.

Driving members consist of 3 separately adjustable, insulated discs. Two of the three discs are set as high and low limit controls, and third disc is set to perform controlling function.

Solenoid located below the contact discs has contact arm which touches one of the discs every 6 seconds. When viscosity changes slightly, the contact arm touches a conducting section of the control disc and sets a double-pole relay. One side of this relay keeps the relay locked in; the other side can be used for signaling or control functions.

When viscosity changes to point past the limits set on the second and third discs, contact arm touches them and they act as safety switches.

Motor and working parts are enclosed for protection against dust and corrosive fumes. Provision is made for introducing continuous gas/air purge under unusually severe conditions. Spindles and connecting shafts can be supplied in any alloy desired.

Maker's Data Sheet 012 supplies further information on the viscosity controller, known as the Viscotrol.

Source: Brookfield Engineering Laboratories, Inc., Dept. CP, Stoughton, Mass. . . . or for more information check CP 6670 on handy form, pages 2 and 3.

**Resets electrically in 1 sec.; counts from 1 to 999,999, up to 12 counts/sec . . .**

register permits choice of 3 types of actuation; can be interlocked with other controls

Uses: "Packaged" electric reset register for use with all types of nuclear and industrial equipment.

Features: Accurate counting from 1 to 999,999, at up to 12 counts per second. Permits a choice of three types of register actuation. Can be reset automatically in approximately one second by means of front-panel switch, or from remotely-located contacts.

Reliable register actuation with as little as 10 ma. at 50v, or with external contacts utilizing the built-in DC supply. Can be interlocked with other controls to minimize possibility of error.

Description: Model

1238. Operates on 105-125v, 50-60 cycle AC and draws 5 watts maximum during resetting.

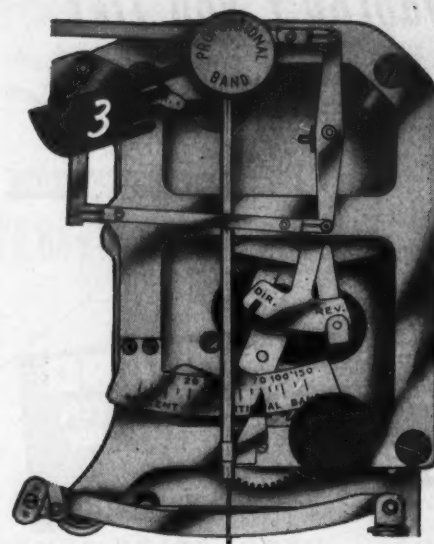
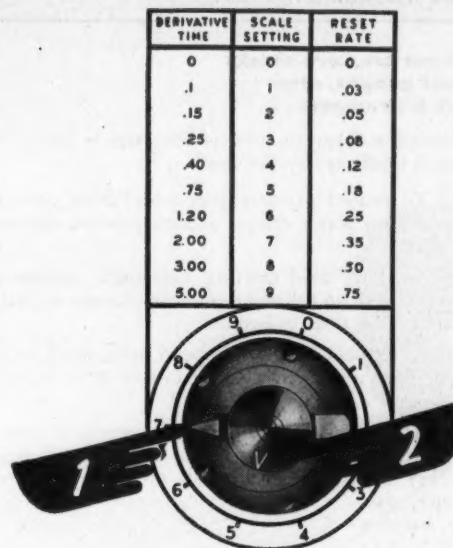
Source: Atomic Instrument Company, Dept. CP, 160 Charles St., Boston, Mass. . . . or for more information check CP 6671 on handy form, pages 2 and 3.

**Rates surface roughness in micro inches**

Instrument for measuring surface roughness (in millionths of an inch) resulting from machining, grinding, etc. operations is illustrated and described in 4-page, 2-color bulletin. Explains operation; includes diagrams of difficult-to-measure surfaces which instrument will rate.

"Profilometer," issued by the Physicists Research Company, Dept. CP, 321 S. Main St., Ann Arbor, Mich. When inquiring specify CP 6672 on handy form, pages 2 and 3.

MARCH, 1950



**if you use . . . or plan to use . . .  
automatic control instruments**

**you should investigate**

**these THREE EXCLUSIVE ADVANTAGES you get in**

**BRISTOL series 500 air-operated controllers**

1. Reset Rate . . .
2. Derivative Time . . .
3. Proportional Band . . .

**ADJUSTMENTS ARE ACCURATELY CALIBRATED  
AND EXACTLY REPRODUCIBLE**

The reset scale is calibrated in actual reset rate. The proportional band scale is graduated in percent of proportional band. The derivative scale is calibrated directly in minutes.

This makes possible the exact duplication of controller adjustments for any process throughout a national organization.

It also makes possible the replacement of controllers on a process with full assurance that such replacements will exactly duplicate the performance of

the original—eliminates the cut-and-try method of arriving at the original setting—saves hours by cutting down on shut-down time.

Accurate reproducibility is only one of the many advantages you get in Series 500 Air-Operated Controllers which exemplifies the outstanding instrument engineering Bristol puts into its complete new line of Series 500 recording and controlling instruments—products of over 60 years of instrument experience.

Write for new Bulletin A120 on Series 500 Air-Operated Controllers. THE BRISTOL COMPANY, 141 Bristol Road, Waterbury 20, Conn.



**BRISTOL**

**Engineers process control for  
better products and profits**

**AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS**

When inquiring check CP 6673 on handy form, pgs. 2-3

WOULDN'T YOU LIKE

to say

GOODBYE

YOU CAN DO IT WHEN YOU  
INSTALL THE

**CASH STANDARD**  
*Streamlined* TYPE  
PRESSURE 1000  
**REDUCING VALVE**

## A few typical USER STATEMENTS

"In our business where we must CONTROL OUR STEAM PRESSURE and the curing temperature TO THE FINEST DEGREE, we have found that the CASH STANDARD Type '1000' valves HAVE MET ALL DEMANDS, giving us the type of cure that is so necessary to an acceptable molded product."

—from a Production Manager

"We have confidence in the performance of the CASH STANDARD '1000' and USE IT EXCLUSIVELY with oil firing control assemblies."

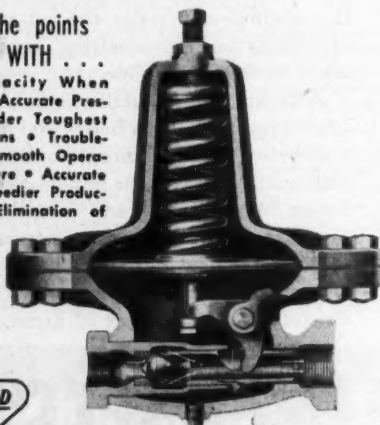
—from an Engineering Corporation

"The two CASH STANDARD Type '1000' pressure reducing valves that we use have, since their installation, GIVEN PERFECT OPERATION WITH NO MAINTENANCE."

—from a Laboratory

### These are the points USERS CHECK WITH . . .

Maximum Capacity When Needed Most • Accurate Pressure Control Under Toughest Working Conditions • Trouble-Free Service • Smooth Operation • Tight Closure • Accurate Regulation • Speedier Production Results • Elimination of Failures • Constant Delivery Pressure • Cost Saving Operation • No Spoilage • Practically Zero in Maintenance Costs



**CASH STANDARD**  
CONTROLS..  
VALVES

WRITE FOR BULLETIN 962

**A. W. CASH COMPANY**  
DECATUR, ILLINOIS

When inquiring check CP 6674 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

### Smooth out pressure shocks to protect gauges, other pressure instruments . . .

all-monel snubber has porous filter which cleans line fluid, is unaffected by dirt, dust

**Uses:** To protect pressure gauges and other pressure instruments from shock due to sudden pressure development or drop.

Snubbers also filter fluid entering instrument, remove all solid inclusions. Can be used to filter instrument air, small quantities of other gases or liquids.

**Features:** Snubbers do not depend upon small orifice for action, thus are not affected by dirt or other particles in line.

**Description:** Units are constructed entirely of monel. Snubbing action is attained by use of small porous monel filter. They have greater corrosion resistance to certain liquids and gases than do stainless steel or brass models; units are designed for use with all-monel instruments now available.

Pressure impulses are cushioned so that stable indications are reached quickly. Where gauges are subjected to continual shock and vibration, as in line containing reciprocating pump, steady readings are obtained. Specialized use is to contain mercury in manometer tubes.

Snubbers are available in 4 porosities, for use with gas, water, oil, and for mercury manometers. Mean pore diameter of porous element for gas is only 0.0002".

Model is provided with 1/4" npt or 1/2" npt connections, fits directly onto 1/4 or 1/2" pipeline. Increases pipe length by about 3/4 and 1-1/2" respectively. Other threads are available when specified.

**Source:** Chemiquip Sales Co., Dept. CP, 193 Bradford St., Brooklyn 7, N. Y. . . or for more information check CP 6675 on handy form, pages 2 and 3.

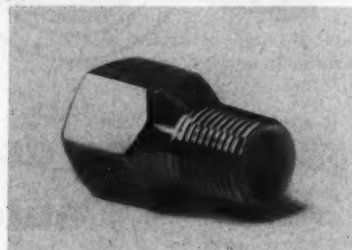
### Check radii, angles, etc. with pocket-sized comparator . . .

precise optical instrument; especially useful in tool room and on production line

**Uses:** Optical comparator for checking linear measurements, circles, angles, radii, etc. Especially adaptable to tool room and production usage.

**Features:** High precision, pocket-sized optical measuring instrument. Permits checking parts in tool room or on production line without their being removed to more elaborate, expensive equipment.

**Description:** Comparator, developed and manufactured by Bell and Howell Company, enables comparison (through a magnifying lens) of part to be checked against a finely calibrated pattern. Lens is a triplet-design aplanatic type of high accuracy; magnification is approximately 7 to 1. Comparator separates in middle to



Snubber smooths pressure variations to protect instruments

## When detecting temperature by radiation method . . .



this new  
Rayotube  
is the  
answer

**Quick-sighting optical system** lets user select desired target easily, and then check the sharply-defined area which the Rayotube sees. Increased sharpness is also of benefit when radiation comes from end of closed tube.

**Hermetically sealed construction** at lens, window, and leadwires keeps out dust and gases; guards accuracy even with high or rapidly changing Rayotube "body" temperatures.

Details on request.

**LEEDS & NORTHRUP**  
MEASURING INSTRUMENTS • TELEMETERS • AUTOMATIC CONTROLS • HEAT-TREATING FURNACES  
Jrl Ad NS3(1b)

When inquiring check CP 6676 on handy form, pgs. 2-3

## GAS FLOGUIDE Low-Cost, pipeline FLOW METER

### WHAT DOES IT DO?

Indicates gas flow rates accurately.

### HOW DOES IT WORK?

A stainless steel "float" moves in a tapered, precision-bore stainless steel metering tube set vertically with the small end down. Instantaneous flow rate is read directly on a scale.

### WHAT CAPACITIES?

3/4" to 4" pipe sizes. SCFH: Carbon Dioxide—45 to 16,000; Hydrogen—200 to 76,000; and comparable capacities for other industrial gases.

### PRESSURE RATINGS?

Primarily designed for low pressure service; can be supplied to withstand 600 psig.

### INSTALLATION?

Fits right into the pipeline, and is easily panel-mounted.

**MORE INFORMATION?** Write for Catalog 47.

**FISCHER & PORTER CO.**

DEPT. ON-9E  
HATBORO, PA.

When inquiring check CP 6677 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Fig. 483  
FLOGUIDE METER



## PROCESS INSTRUMENTATION

permit cleaning interior optical surfaces, and for adjustment of focal length to meet individual eye requirements. Transparent plastic material is used between lens and calibrated pattern to permit entrance on pattern and work being measured.

Twenty-one circles and radii lie in range from .002 to  $\frac{3}{8}$ "; angles between 0 and 90° are divided in 5° increments. Linear measurements: 2 scales, 0 to .5" and 0 to 10 mm have divisions of .005" and .2 mm respectively; nine segments range from .001 to  $\frac{3}{16}$ ".

**Source:** Distributed by the National Tool Company, Dept. CP, 11200 Madison Ave., Cleveland 2, O. . . or for more information check CP 6678 on handy form, pages 2 and 3.

### **Predetermined count is selected by direct setting of dial switches . . .**

electronic counter trips relay and resets without missing a count when total is reached

**Uses:** For counting operations of all types, such as registering number of large or small items passing given point; counting electrical impulses, shaft rotations, linear measurements, etc; for generating square waves and for frequency dividing.

**Features:** Predetermined count is selected by direct setting of dial switches, rather than by setting of complementary numbers.

Units count up to 60,000 signals per min with absolute accuracy, will reset without missing a count.

**Description:** Counters will predetermine any count within range of machine. Units are available with capacities of 2, 3, 4, 5 and 6 digits. High speed relay action is provided each time predetermined count is reached.

Counters are completely electronic, have no moving parts to wear. Each tube in counting circuit has small neon glow tube connected to it and projecting through front panel. These not only indicate progression of count, but indicate location of defective tubes when they occur.

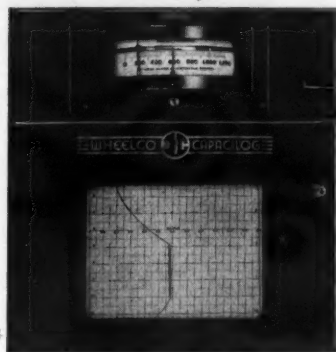
Output consists of high-speed mercury relay which operates in 0.002 sec. Several types of relay actions are available to suit specific uses.

**Source:** Potter Instrument Co., Inc., Dept. CP, 136-56 Roosevelt Ave., Flushing, N. Y. . . or for more information check CP 6679 on handy form, pages 2 and 3.

### **Locates leaks in pressure, vacuum systems**

Leak detector employing the mass spectrometer principle for locating leaks in evacuated or pressure systems is illustrated and described in 16-page, 2-color bulletin. Covers applications (including probe and envelope methods) in high vacuum equipment, multiple testing, testing buried gas lines, refrigeration, hermetic sealing. Discusses operation, performance, features, electrical components, and accessories.

Many photos, schematic diagrams, and sketches. Bulletin CEC-1801B, issued by the Consolidated Engineering Corporation, Dept. CP, 620 North Lake Ave., Pasadena 4, Calif. When inquiring specify CP 6680 on handy form, pages 2 and 3.



Portable Potentiometer



Panelmount Capacitrol



Utilize Wheelco's famous electronic link — the *instrumentality* which responds instantly to help make your present production or process equipment more efficient — more valuable!

Used in the Capacilog strip chart recorder, Wheelco *instrumentality* gives you fast, simple and precise permanent recording — plus indication and control of temperature, speed, static strain loads, AC-DC voltage, amperage and other electrically measurable factors.

Now you can have a permanent record of your process variables — and at any time easily remove any portion of the record for inspection, comparison or filing. You can now simplify supervision and at low initial cost have an accurate continuing check on your operations.

Remember, *instrumentality*, whether used in the Capacilog or other Wheelco instruments, assures user benefits in production control and uniformity of product — savings in time and fuel and ease of maintenance and service.

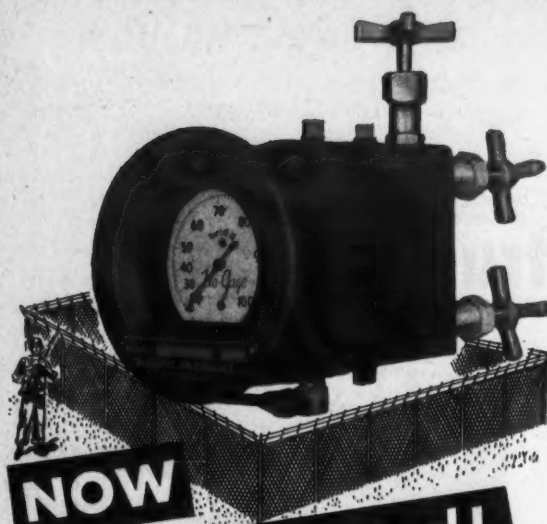
When specifying instruments, specify Wheelco — get the electronic link, the *instrumentality*, for efficiency and economy.

Write for Bulletin Z-6300,  
Wheelco Instruments Company,  
845 W. Harrison Street, Chicago 7, Illinois



# wheelco *electronic controls*

When inquiring check CP 6681 on handy form, pgs. 2-3

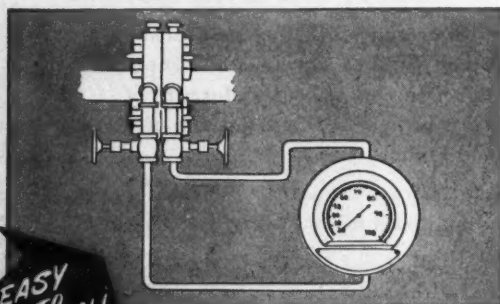


**NOW**

**Extra-Protected!**

There's no gauge like FLO-GAGE for simplicity, economy, and all-around usefulness. Now, this compact rate of flow indicator packs another big feature: positive, automatic protection against overloads and reverse differentials!

Other features of the Builders FLO-GAGE: Accurate — easy to read — low cost — requires no mercury or auxiliary power supply — no stuffing box — negligible maintenance — simple design — durable construction — ideal for water, steam, air or gas lines. For information and descriptive Bulletin, address Builders-Providence, Inc. (Division of Builders Iron Foundry), Providence 1, R. I.



**EASY  
TO  
INSTALL**

with orifices or other differential producers.

#### BUILDERS PRODUCTS

Flow meters and controllers . . . mechanical and differential . . . for liquids, steam, air, and dry materials. The Venturi Meter • Chlorinizers-Chlorine Gas Feeders

**BUILDERS-PROVIDENCE**  
*Instruments*

When inquiring check CP 6682 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

### Counter for alpha radiation fits pocket . . .

source's radio-active content can be less than 1%; readings may be taken in subdued light

**Uses:** Detects alpha particles emanating from any source. Radio-active content of source may be as low as a fraction of a percent. May be used for qualitative and quantitative analyses of uranium and thorium ores, it is reported.

**Features:** Pocket-size instrument requires no batteries, tubes or amplifiers. Does not have to be used only in the dark; readings may be taken under subdued white light or red light illumination.

**Description:** Device is stable in operation and may be calibrated against known sources. It uses a highly efficient optical system and newly developed phosphor screen to provide statistical counts of alpha-particle scintillations. Complete with luminescence-quenching filter, radio-active samples, aluminum carrying case and full instructions.

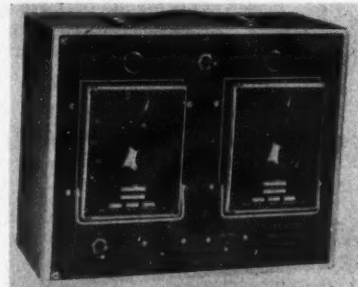
**Source:** Model 501 Alpha-Counter is manufactured by Nuclear Division of Clarkstan Corporation, Dept. CP, 11927 W. Pico Blvd., Los Angeles 64, Calif. . . . or for more information check CP 6683 on handy form, pages 2 and 3.

### Times 2 repetitive operations that follow each other consecutively . . .

compact, portable unit continuously follows schedule set on its two time-interval dials

**Uses:** Time cycle control of production machinery, conveyor systems, packaging operations, etc.; life-testing of apparatus, many other types of laboratory work.

**Features:** Two timing elements of timer control two separate operations consecutively, repetitively and automatically. Unit is compact and portable. Timing elements may be easily changed.

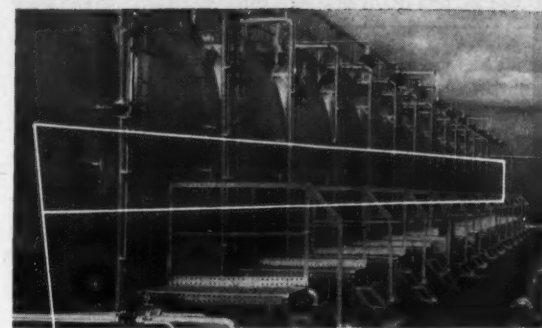


Timer is complete in portable, compact assembly

the operation it controls after the time set on its dial has elapsed. At the same time, it throws control over to the other timing element, starting the operation it controls. At the end of the interval set on dial of the second timing element, the



Analyzing sample for alpha radiation



*Right down the line!*

it's **WESTON** All-Metal Thermometers

For quick temperature readings on tanks, processing equipment, pipe lines, specify WESTON *right down the line*. Their large dials are easy to read . . . all-metal construction assures dependability . . . they stay on the line longer. Available in many types, stem lengths and ranges. Call your jobber or local WESTON representative. WESTON Electrical Instrument Corporation, 706 Frelinghuysen Avenue, Newark 5, New Jersey.



**WESTON** *Instruments*

When inquiring check CP 6684 on handy form, pgs. 2-3

## Surface PYROMETERS for every purpose

The routine use of CAMBRIDGE Surface Pyrometers takes the guesswork out of temperature determination in many industries. The CAMBRIDGE is accurate, dependable, rugged, quick-acting and easy to use. The Roll Model is for checking surface temperatures of still or moving rolls. The Needle Model is for insertion into materials in a plastic or semi-plastic state for within-the-mass temperature determination. The Mold Model is for checking surface temperatures of mold cavities and surfaces of almost any contour.

Send for Bulletin 1945A.

**CAMBRIDGE INSTRUMENT CO., INC.**  
3706 Grand Central Terminal  
New York 17, N. Y.

**CAMBRIDGE**  
PIONEER MANUFACTURERS OF  
PRECISION INSTRUMENTS

Moisture Indicators and Recorders • Physical Testing Instruments  
Surface Pyrometers • Laboratory Instruments for A. C. & D. C. • Galvanometers  
Engineering Instruments • Gas Analysis Equipment • Physiological Instruments  
and many other Mechanical and Electrical Instruments

When inquiring check CP 6685 on handy form, pgs. 2-3



second operation is halted by the instrument, and control is automatically switched back to the first timing element. In this manner, the sequence is maintained indefinitely, no adjustments being necessary until new time intervals are required.

Complete control cabinet of the Tandem Recycling Timer measures  $11\frac{1}{2} \times 9 \times 7$ ", and contains two sockets into which the timing elements are plugged so that they control a SPDT load relay. Contact circuit of relay is unpowered, permitting application of the particular voltage and current necessary for test or production. Contacts are rated at 20 amp, 115 volts AC non-inductive.

Load control switch, on-and-off toggle switch and pilot lamp are integrated with the other components into the single assembly.

**Source:** Manufactured by Industrial Timer Corporation, Dept. CP, 110 Edison Pl., Newark 5, N. J. . . . or for more information check CP 6686 on handy form, pages 2 and 3.

#### Read results directly from face of electronic scaler . . .

unit based on scale of ten, permits fast recording of data with fewer errors

**Uses:** Primarily designed to count electrical impulses from Geiger tubes, the unit can be used in any application requiring accurate high-speed scaling.

**Features:** Counter is based on scale of ten rather than scale of 2, thus permitting direct reading of results from register and scales. Quicker tabulation with fewer errors is possible. Unit registers figures to and including 6 digits.

Electrical stopclock can be attached for measuring reception time accurately. Timer is controlled by reset-stop-start switch on counter, thus eliminating errors in time measurement.

**Description:** Scaler uses two "descascale" plug-in units which are based on 4 cascaded scales of two with 2 feed-back loops to provide scale of ten. Two vertical rows of ten neon bulbs each are mounted on instrument panel to indicate last two digits; these are connected directly to the "descascale" units. Plug-in units have 4 indicator lights mounted on them which show directly the counting position of each scale of two; these lights are not visible when case is closed.

Replaceable discriminator input is completely shielded to minimize pick-up of spurious counts. Input is easily disassembled for test or repair.

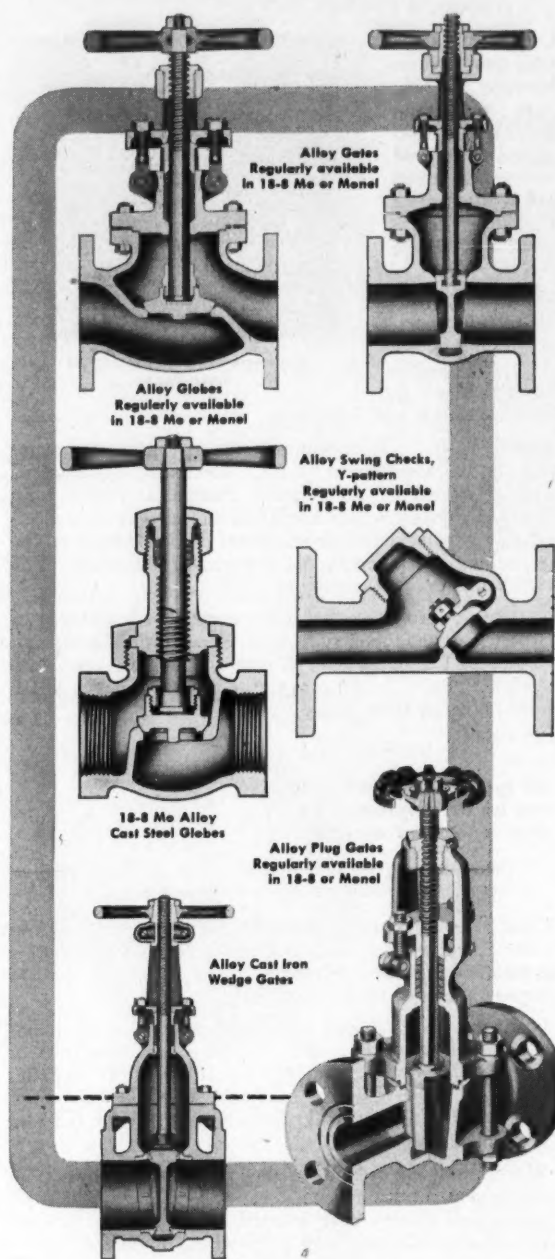
Two high-voltage controls, coarse and fine, control Geiger tube voltage from 350 to 2200 volts. Coarse control covers entire range; fine control adjusts voltage within 200 volts. Tube voltage is shown on meter with 4" scale.

All power supplies are regulated to minimize effects of line voltage variations. Change in output varies less than 0.025% per 1% change in line voltage.

As in the case of most scalers which have the scales followed by a mechanical register, the coincidence loss at high counting rates is determined by dead-time of the register rather than by resolving time of scales and input circuit.

**Source:** Tracerlab Inc., Dept. CP, 130 High St., Boston 10, Mass. . . . or for more information check CP 6687 on handy form, pages 2 and 3.

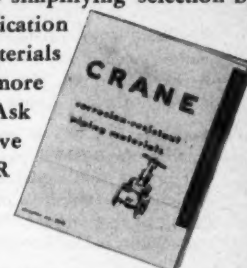
## Do you know all you should about CRANE Corrosion-Resistant Valves?



Do you know that this Crane line offers an unusually complete assortment of corrosion-resistant gates, globes, angles and checks? That these valves are regularly available in those alloys found to be most successful under the widest range of corrosive conditions? That they are ideal for process industries where maximum product purity, avoidance of product discoloration, and resistance to corrosion are of prime importance?

#### SEND FOR THIS NEW CIRCULAR

For your convenience, Crane has prepared a 36-page circular that gives you a comprehensive showing of the Crane corrosion-resistant line—including a number of outstanding new developments. This informative guide, in addition to simplifying selection by furnishing essential specification data, recommends those materials best suited for handling more than 250 different fluids. Ask your Crane Representative for a copy, or WRITE FOR CIRCULAR NO. 320. No obligation.



CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.  
Branches and Wholesalers Serving All Industrial Areas

EVERYTHING FROM . . .

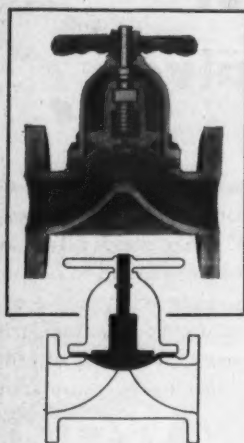
VALVES  
FITTINGS  
PIPE

# CRANE

FOR EVERY PIPING SYSTEM

PLUMBING  
AND  
HEATING

When inquiring check CP 6688 on handy form, pgs. 2-3



If you need a diaphragm valve . . . you need all the advantages of diaphragm closing . . . you need

## GRINNELL-SAUNDERS DIAPHRAGM VALVES

Diaphragm gives leak-tight closure against grit, scale, solid matter . . . even when trapped on the weir. The resilience of the diaphragm, plus the large area of contact, gives leak-tight closure against pressure or vacuum.

Diaphragm lifts high for streamlined flow in either direction . . . Smooth, streamlined passage, without pockets, prevents trapping of sludge and reduces frictional resistance to a minimum—irrespective of direction of fluid flow. No disc holder in fluid stream. Self-draining when installed with the spindle at 15 degrees above the horizontal position.

Diaphragm absolutely isolates working parts from fluid . . . No perforation or puncture in the diaphragm where fluid or gas can possible leak by the valve spindle. No sticking, clogging or corroding of working parts. Valve lubricant cannot contaminate the fluid in the line.

Diaphragm, body and lining materials to meet particular conditions . . . Bodies stocked in cast iron, malleable iron, stainless steel, bronze and aluminum; other materials on special orders. Valve bodies lined with lead, glass, natural rubber or neoprene. Diaphragm materials of natural rubber or synthetics. Working pressure, 150 lbs.; maximum temperature, 180°F.

Diaphragm is only part that normally wears and needs replacement . . . Compressor and finger plate combine to support the diaphragm in all positions. The diaphragm can be replaced quickly without removing valve from line. No refacing or reseating. No disc holder to require tightening or replacing. No packing glands to demand attention.

Write for Grinnell-Saunders Diaphragm Valve Catalog 4-S



# GRINNELL

GRINNELL COMPANY, INC., Providence 1, R. I. Branch warehouses: Atlanta • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach • Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

When inquiring check CP 6689 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

**Detects temperature changes of 0.1° as it controls . . .**

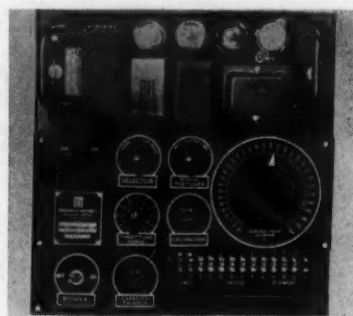
electronic controller resists vibration, dust, moisture; connects to recorders, indicators

**Uses:** Controls temperatures between 20° below zero and 300° above. Designed to be used with manufacturer's indicating and recording instruments, if so desired.

**Features:** Sensitive to temperature changes of 0.1°. Reported to be immune to vibration, dust and dampness.

**Description:** Wire-wound sensing element forms one leg of Wheatstone bridge. Electrical unbalance of bridge, caused by temperature change, is imposed on electronic circuit which amplifies, and also detects direction of unbalance to operate either of two output relays, depending on direction of temperature change. The two relays control a motor.

**Source:** No. 077 electronic control is a product of Brown Instruments Division of Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Roberts Aves., Philadelphia, Pa. . . or for more information check CP 6690 on handy form, pages 2 and 3.



Electronic temperature-control instrument

**All types of insulation testing can be accomplished by dual-operated megger . . .**

hand-crank generator operates unit in field; plug-in rectifier simplifies repetitive or time testing

**Uses:** For testing multi-conductor communication cables; multi-conductor control and power circuits; testing generators, motors, cables and other equipment by the time-resistance method; for experimental work.

**Features:** Insulation tester operates either by hand-crank or by rectifier. When making repetitive tests or time-resistance measurements, separate rectifier supplies 500 volts DC to tester by converting 115-volt AC power. When testing in the field, rectifier is unplugged and unit is cranked by hand.

When using the rectifier, merely plugging in power lead disconnects the hand generator. When power lead is removed and dummy plug inserted, hand generator is ready to operate. No switching or re-wiring is needed.

**Description:** Scale calibration is independent of DC operating voltage because the two interacting ohmmeter coils receive current from the same source: hand generator or rectifier.

Because of this arrangement, any change in voltage affects both coils proportionately. Scale calibration is therefore unaffected by speed at which crank is turned, by circuit voltage which feeds the rectifier, or by exact strength of the permanent magnets.

Unit is protected by a "Guard" system which prevents errors due to leakage current between positive and nega-



**Alnor Velometer**  
Gives instant, direct reading of Air Velocity—Anywhere!

Here is a precision-built, self-contained, portable instrument that gives instant, accurate reading of air velocities—anywhere. Measures speed of flow through ducts, grilles, motors, furnaces, etc., or in the open. Needs no calculations or reference charts. Anyone can use it and get accurate measurements. Available in a wide range of scales, and with a wide assortment of jets and fittings if needed. You'll want full details and prices, so write for Bulletin No. 2448-0. Illinois Testing Laboratories, Inc., Room 504, 420 N. La Salle Street, Chicago 10, Ill.



**Alnor**

PRECISION INSTRUMENTS FOR EVERY INDUSTRY

When inquiring check CP 6691 on handy form, pgs. 2-3

**NOW WE CAN MAKE THESE TESTS IN OUR OWN SHOP! SAVING TIME and COSTS!**

## DILLON PORTABLE UNIVERSAL TESTER

For Tensile, Compression or Transverse testing of any material. Can be readily and accurately operated by anyone trained or untrained. Capacity 10,000 psi with 1" cross section samples, 200,000 psi with samples 1/4" dia. 7 dynamometer gauges, 0-250 to 0-10,000 lbs. Average operator can make hundreds of tests a day on spot welded specimens, riveted assemblies, plastics, wire, rubber, cloth, etc. Counterbalanced handwheel makes operation easy. At maximum torque of 10,000 lbs., peak load on wheel is only 8 1/2 ft. lbs. Can be motorized. Send for illustrated bulletin and low prices.



**W. C. Dillon & Co., Inc.**

5410-A W. HARRISON ST., CHICAGO 44, ILL.

When inquiring check CP 6692 on handy form, pgs. 2-3

CHEMICAL PROCESSING

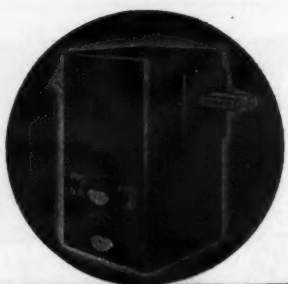




## BURRELL BOX and MUFFLE FURNACES

HIGH TEMPERATURE "UNIT-PACK-  
AGE" ELECTRIC BOX and MUFFLE  
FURNACES for melting, sintering,  
heat treating, ignitions, etc.

Write for Bulletins 315 and 515.



## BURRELL TUBE FURNACE

HIGH TEMPERATURE "UNIT-PACK-  
AGE" ELECTRIC TUBE FURNACES  
for determination of carbon or sulfur  
by combustion and for experimental  
or production purposes.

Write for bulletin 310.



When inquiring check CP 6693  
on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

tive sides of circuit. System by-passes any leakage current around the ohmmeter, so it can cause no error.

Insulation testers are also available as either rectifier-operated or hand-crank-operated models. All testers may be furnished with either or both a discharge switch and an ohm scale.

Ohm scale has range from 0 to 10,000 ohms, and is in addition to regular megger scale. Discharge switch is used immediately preceding and following resistance test to dissipate DC charge. Feature is essential for time-resistance tests, and serves as safety measure when testing equipment having any appreciable capacitance.

Units have ranges of 0 to 200, 0 to 1000, and 0 to 2000 megohms. Instruments weigh 7-1/2 lbs, measure 9 x 5 x 6-1/2". Rectifiers weigh 5-1/2 lbs, measure 6-3/4 x 5-1/4 x 6". More information is carried in maker's bulletin 21-46-62.

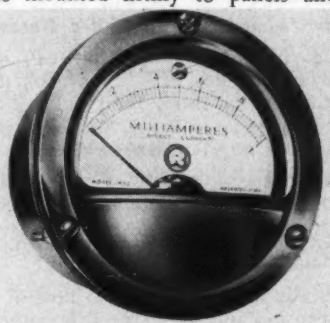
Source: James G. Biddle Co., Dept. CP, 1316 Arch St., Philadelphia 7, Pa. . . or for more information check CP 6694 on handy form, pages 2 and 3.

### "Ruggedized" panel instruments built to US Army vibration, shock specifications . . .

incorporate faster response-time, more sustained accuracy, lower bearing friction.

Uses: Hermetically-sealed electrical indicating panel instruments, especially designed to withstand high shock and vibration specifications of US Army Signal Corps Engineering Laboratories.

Features: Performance requirements fulfilled as follows: 1) instruments mounted firmly to panels and subjected to 2000-ft-lb blows in each of three orientations with respect to direction of applied blow; 2) extremely severe vibration for six-hr periods; 3) tumble testing in large, compartmented tumbling barrel for one hr. Improvements over average instruments



"Ruggedized" panel instrument

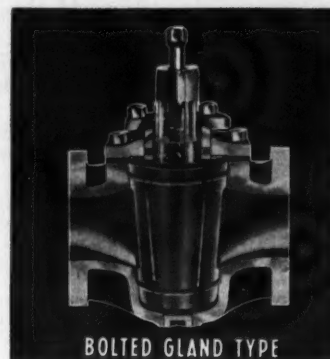
of this type, in normal applications, are said to include faster response time, more sustained accuracy and lower bearing-friction.

Description: Newly-developed shock mount attenuates high-amplitude low-frequency shock forces. Re-designed basic D'Arsonval Type DC movement reduces mass, thus reducing magnitude of forces developed by shock. Revised frame structure secures core against shock failure. Construction incorporates new hair springs, fastening techniques, extremely high torque-to-weight ratios, reduced overall weight, hermetic sealing against any climate. Laminated aluminum alloy tubing pointer has positive lock on balance cross of moving system to withstand extreme shock and vibration and permit greater electrical overloads without pointer damage.

Source: Marion Electrical Instrument Company, Dept. CP, Manchester, N. H. . . or for more information check CP 6695 on handy form, pages 2 and 3.

# IN NO OTHER VALVE

*So many features*  
*every one IMPORTANT!*



BOLTED GLAND TYPE



HYPRESEAL TYPE



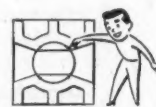
POSITIVE ROTARY ACTION  
Tapered plug



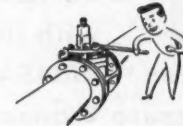
RESILIENT SHOULDER SEAL  
Allows jacking of plug



RESIST CORROSION, EROSION  
Lubricant protects parts



UNEXPOSED VALVE SEAT  
No contact with line fluid



ADJUSTABLE UNDER PRESSURE  
Simple external adjustment



RELUBRICATE UNDER PRESSURE  
No need to shut down line



A TIGHT SHUT-OFF ALWAYS  
Sealed with lubricant



PRESSURE-SEALED PORTS  
"Sealport" lubrication



MOST COMPACT SIZES  
For restricted areas

*Nordstrom*  
LUBRICATED VALVES

now automatically lubricated with *Hypermatic*  
REQUEST DESCRIPTIVE BULLETINS

Nordstrom Valve Division—ROCKWELL MANUFACTURING CO.  
400 N. Lexington Ave., Pittsburgh 8, Pa. Offices in all principal cities

When inquiring check CP 6696 on handy form, pgs. 2-3

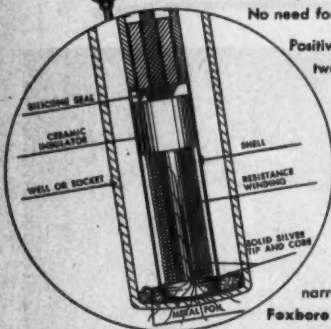
# Here it is!

## ... a Resistance Bulb with the Speed and Economy of a Thermocouple

THE DYNATHERM<sup>®</sup> Resistance Bulb, with super-fast response and sustained accuracy, combines the advantages of both resistance and thermocouple type temperature measurement in ranges up to 600°F. No premium cost. No need for special wells or sockets.

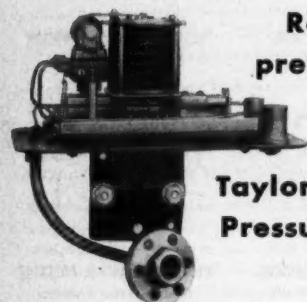
Positive, metal-to-metal end-contact between bulb and any well or socket gives the Dynatherm Bulb a speed equal or superior to any other system utilizing a socket. In addition, the resistance bulb method of temperature measurement eliminates reference junction compensation and attendant errors, assuring full accuracy even on narrow spans. Write for details. The Foxboro Company, 190 Napaneset Ave., Foxboro, Massachusetts, U. S. A.

\*Trade Mark



**FOXBORO** INSTRUMENTATION

When inquiring check CP 6697 on handy form, pgs. 2-3



## Read changing pressures instantly 1000 ft. away with new Taylor "TRANSAIRE" Pressure Transmitter

\*Trade-Mark

New Taylor TRANSAIRE Pressure Transmitter with narrow range spans lets you measure and transmit minute pressure changes up to 1000 feet with instant accuracy! Works on simple force-balance principle. Gives you accuracy of 1/4% of range span (conventional devices are only accurate up to 1/4% of upper range limit). Here's accuracy and sensitivity never before possible in pressure measurement—plus the convenience of suppressed ranges at high pressure levels.

### 7 IMPORTANT ADVANTAGES:

1. Range spans of 20 to 40 psi available throughout range limits of 35 to 415 psia.
2. Volumetric type pressure system is extremely accurate, practically clog-proof, has corrosion-resistant 316 stainless steel diaphragm.
3. Temperature and barometric compensation for higher accuracy.

4. Perfect for many jobs, especially thin fractionating columns.
  5. No individual calibration of receivers or controller—thanks to standardized 3 to 15 psi output air pressure.
  6. Simple screwdriver adjustment for shifting the operating ranges.
  7. Interchangeable manifold assemblies make 20 and 40 psi range spans optional.
- This Taylor TRANSAIRE Pressure Transmitter is another step in Taylor's program to produce industrial instrumentation unsurpassed in accuracy, simplicity, and durability. We're doing this, of course, to help you keep costs down and quality up. Ask your Taylor Field Engineer! Or write for BULLETIN 98099. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.

TAYLOR INSTRUMENTS MEAN "ACCURACY FIRST"

When inquiring check CP 6698 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

### Eliminate point-by-point method of plotting relationship of 2 variables . . .

chart drive of recorder is controlled by signal input; plots any 2 variables as X- and Y-coordinates

Uses: To plot relationship between 2 variables. Can be used to draw curves such as hysteresis loops, temp vs. temp, stress vs. strain, etc.

Features: Shows 1 variable as function of the other. Eliminates tedious compilation and manual plotting by experienced personnel. Plots data in minutes that would require hours using point-by-point method.

Description: Recorder has 2 measuring circuits. Pen travel is controlled by standard electronic circuit, and chart drive is governed by similar circuit. Unit may be used to plot any 1 variable against time as do standard recorders.

Response of the unit is amply fast. Pen takes 3 seconds for full scale travel of 9-7/8". Full chart travel is 10", takes 4 secs.

Standard minimum input voltage for full travel of X coordinate is 2.5 millivolts, that for full travel of Y coordinate is 10 mv. Unit is known as X-Y Recorder.

Source: Leeds & Northrup Co., Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. . . or for more information check CP 6699 on handy form, pages 2 & 3.

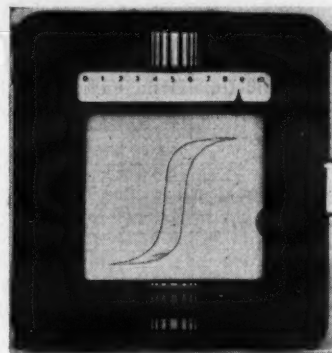


Chart drive is controlled by process variable, permits plotting relationship of 2 variables

### Samples, meters flow . . .

sampler gives continuous, accurate information on flow rate without necessity of calculations

Uses: Automatically measures the total flow of any liquid or fluid suspension and simultaneously gathers a series of samples for analysis. Example: measurement of sewer losses in chemical plants, pulp and paper mills, and other process industries.

Features: Gives continuous and accurate information on rate of flow without necessity of calculations. Provides representative sample of fluid flowing.

Description: Sampler consists of a stainless steel tube with a piston-operated plunger in a hydraulic cylinder. Electric timer actuates a solenoid valve at fixed intervals, causing plunger to withdraw a sample of liquid flowing and deposit it in container. Sample volume varies according to depth of flow across weir; is proportional to amount of liquid flowing over weir.

By measuring depth of composite sample in container and referring to a chart, total flow past weir for any desired period can be ascertained. Small portion of sample deposited in container is withdrawn for analysis.

Standard sampler is made with Type 303 stainless steel sample tube, sample container, piston rod, and sample

# A.S.T.M. Spec. THERMOMETER

## PRINCO

is manufactured by

The A.S.T.M. has issued specifications for fifty-five different liquid-in-glass thermometers. (Six more will be issued within the next few months.) Every one is available with the famous PRINCO craftsmanship which in itself has set standards of precision and accuracy.

Whether your requirements are for Kinematic Viscosity, Cloud and Pour, Acid Heat or any other special purpose thermometer, you can be sure that PRINCO has it. Of course, PRINCO also has a complete line of General Purpose Thermometers. For complete information, send today for PRINCO BULLETIN "C".

**PRECISION**  
THERMOMETER & INSTRUMENT COMPANY  
**PRINCO**  
PRECISION INSTRUMENTS FOR INDUSTRY

1404 Brandywine Street, Philadelphia 30, Pa.  
Sole Canadian Representatives: PEACOCK BROS., Ltd.

When inquiring check CP 6700 on handy form, pgs. 2-3

# BATCH MIXING MADE... Simple Safe! Sure!

...with

## EMPIRE INDUSTRIAL METERS

You can batch mix, blend or process most any liquid with Empire meters. You'll gain speed, accuracy and the safety of a closed piping system. You'll save money!

Empire meters are efficient tools for the chemical, food, drug and process industries. They provide exact measurement with the turn of a valve. As a further convenience, automatic shut-off controls are available in some sizes. Several types of registers can be furnished. Sizes 1/4" to 3".

Ask for Bulletin B-621

PITTSBURGH EQUITABLE METER DIVISION  
ROCKWELL MANUFACTURING COMPANY  
Dept. A Pittsburgh 8, Pa.

When inquiring check CP 6701 on handy form, pgs. 2-3



Save TIME • LABOR • DOLLARS  
For use in Lab,  
Plant or both

# Brookfield SYNCHRO-ELECTRIC Viscometer

## TEST STUDY CONTROL VISCOSITY

As Simply, Quickly, Easily as Taking Temperature

Just a flick of switch, then read the Brookfield dial, and you have your viscosity determination in centipoises. The whole operation, including cleaning up, usually is accomplished in *less than a minute*.

Available in a variety of models suitable for extremely accurate work with a wide range of materials, both Newtonian and non-Newtonian, the Brookfield Viscometer is portable and plugs in any A.C. outlet — *can be used in lab, plant, or both*.

Write today for fully illustrated 8-page catalog.

**NEW!** Two motors and exclusive counter-rotating action make new Brookfield Laboratory Mixer quickest, most effective on market. Creates annular flow, provides scissor-like shearing, and stops messy slop-overs. Write for descriptive brochure "M".



**Brookfield ENGINEERING LABORATORIES, INC.**  
210 Porter St., Stoughton, Mass.

When inquiring check CP 6702 on handy form, pgs. 2-3



## Lumenite Electronic Liquid Level Controls

prevents overflow of tanks, vats, boilers etc.; ends overflow loss; avoids damage to boilers and kettles, etc. by preventing burning dry.

Operates by electronics: Less than 1 V. — 1/100,000 Amp.

Temperature changes or extremes do not affect action.

Completely sanitary — easily sterilized.

Absolutely accurate.

Needs no attention.

Whatever your problem there is a Lumenite Electronic Liquid Level Control to solve it. Write us for details.

**Lumenite Electronic Company**

407 S. Dearborn Street Chicago 5, Ill.

When inquiring check CP 6703 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

plunger. Operating cylinder is of bronze; control box is of aluminum. Sampler is available in special materials to meet corrosive conditions.

Sampler is installed in the center of the flume at a specified distance ahead of the weir. Control box housing, timer, and solenoid valve can be mounted at any convenient distance from sampler. Container can be mounted away from sampler by providing a trough for conducting samples.

**Source:** Product of the DeZurik Shower Company, Dept. CP, Sartell, Minn. . . or for more information check CP 6704 on handy form, pages 2 and 3.

### No gears, clutches to wear in impulse timer . . .

accurate device provides repeated short impulses or controlled on-off operation

**Uses:** Provides continuous repeat of impulse signals for elevator starting, production line control, pilot circuits, other timing devices. Same unit can be used for turning current on and off in equal periods of time. In this case, it is useful for exhaust fans, mixing machinery, molding machinery, laboratory testing, etc.

**Features:** No clutches or gears which might wear out. Timing accuracy is reported to be high.

**Description:** Standard models have minimum settings of 1½ to 9 sec, and maximum setting of 60 to 360 sec. Time periods are adjustable from 3% minimum to 98% maximum of total time cycle of dial. Adjustment is simple: a tripping rider on outer rim of dial is moved to desired time. If desired, units are available to operate up to 24 hrs.

All model RT impulse timers have dustproof case 8" wide, 12" high and 4½" deep. They all have 60 divisions on a 4" dial (exception is Model R9 which has 7" dial for wider flexibility of timing).

Extra equipment is available, including a signal light in box, a buzzer, and relay for operating signals other than 110V, 60 cycles, independent signal circuit.

**Source:** Zenith Electric Co., Dept. CP, 152 W. Walton St., Chicago 10, Ill., is the maker . . . or for more information check CP 6705 on handy form, pages 2 & 3.

### Scales of gas-flow meters easy to read . . .

line of direct-reading units includes two accurate, compact instruments for small flows

**Uses:** Flow measurement of gases.

**Features:** Line of meters has easy-to-read scales, and includes two "Bantam" meters to meet demand for a compact, accurate, low-cost unit.

**Description:** Several types of these streamlined, direct-reading instruments are available: for horizontal-pipe mounting, panel mounting, angle-pipe mounting, and panel mounting with integral control valve.

Both of the "Bantam" meters are for non-corrosive gases, and may be mounted on pipeline or auxiliary equipment. One is for flow range of 0.05 to 0.7 liters oxygen per min; the other for 10 to 100 cc carbon dioxide per min.

**Source:** Made by Hoke Inc., Dept. CP, Englewood, N. J. . . or for more information check CP 6706 on handy form, pages 2 and 3.



Complete

## Jacketed Pipe and Fluidometer Systems

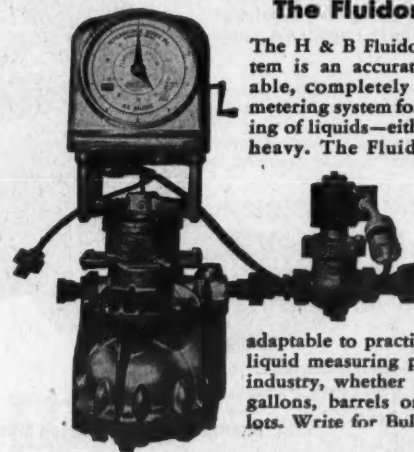
### For All Liquid Handling Problems



H & B Jacketed Pipe Systems are engineered and manufactured to meet every requirement of dependable and economical processing in operations where the maintenance of uniform temperature in the process pipes is highly essential. Regardless of whether the product being handled requires a hot or cold temperature, or what heating or cooling medium is used, H & B Jacketed Pipe and Fittings help assure efficient production. Write for Bulletin S-47.

### The Fluidometer

The H & B Fluidometer System is an accurate, dependable, completely automatic metering system for the batching of liquids—either light or heavy. The Fluidometer is



adaptable to practically every liquid measuring problem in industry, whether it involves gallons, barrels or tank car lots. Write for Bulletin E-46.

**HETHERINGTON & BERNER INC**  
711 Kentucky Avenue, Indianapolis 7, Indiana

When inquiring check CP 6707 on handy form, pgs. 2-3

Now EVERY laboratory can use  
modern spectrophotometric methods

## THE BECKMAN MODEL "B"

accuracy . . . speed . . . simplicity  
AT A NEW LOW PRICE



Spectrophotometric measurements—based on analysis of liquid, solid or gaseous samples by light absorption—have become one of the most important methods of today's

process control operations. Complicated analyses requiring hours to perform by standard chemical procedures are now completed in a matter of minutes using modern spectrophotometric methods.

Up to the present, quality instruments have been beyond the reach of many laboratories. Now, however, the development of the new Beckman Model "B" Spectrophotometer makes available for the first time a precision instrument—convenient and simple to operate—yet versatile, accurate and low-priced.

The Model "B" combines many of the advancements pioneered in the famous Beckman Quartz and Infrared Spectrophotometers . . . high resolution . . . wavelength and photometric accuracy . . . freedom from stray light . . . wide spectral range . . . quality construction.

It features direct reading absorbance and transmittance scales . . . complete elimination of stray light from 360 to 1000 millimicrons—less than 1% even at 320 millimicrons . . . interchangeable phototubes for wider wavelength range . . . inexpensive sample cells . . . 4-position cell carriage for faster readings . . . and many other important features.

The Model "B" is by all standards the outstanding instrument in its field. Write for full details. Beckman Instruments, National Technical Laboratories, South Pasadena, 11, Calif.



BECKMAN INSTRUMENTS  
control modern industries

\* Beckman Instruments include: pH Meters and Electrodes • Spectrophotometers — Radioactivity Meters — Special Instruments

When inquiring check CP 6708 on handy form, pgs. 2-3



### The "Model B" is THE Ideal Instrument For Simplifying Routine Analyses

Regardless of the nature of your laboratory operations—determination of impurities, control of quality, simplifying process control, color matching and control, or any of a wide range of other procedures—chances are you can speed up your analyses and greatly simplify your work by adopting modern spectrophotometric methods.

But remember—the accuracy and reliability of spectrophotometric analyses are no better than the instrument you use. So be sure to check all the features of the Beckman "Model B" Spectrophotometer—compare this instrument point by point with any other in its field—and you'll readily see why it is, by all standards, the outstanding spectrophotometer in its price range.

Here is an instrument carefully engineered so that stray light effects are negligible . . . on instrument where readings can be reproduced on sample after sample without "drift" or other inaccuracies . . . where band widths can be readily varied to permit the high resolution required in many analytical problems . . . where a variety of absorption cells can be used interchangeably to provide optimum path lengths . . . and where many other outstanding features are provided to assure maximum versatility, accuracy and dependability.

Be sure to get the full details on the many money-saving, time-saving applications for the Beckman "Model B" in today's chemical laboratories . . . and on the many unique advancements built into this instrument that make it such an outstanding value in its price range. See your authorized Beckman dealer—or write direct for complete data.

## PROCESS INSTRUMENTATION

### Lightweight pressure switch has adjustable range, holds calibration . . .

high-pressure surge has no effect; design permits use in range of minus 85 to plus 200°F

Uses: SPDT switch for pressure operation at 10-500 psi, and in ambient temperatures of minus 85°F to plus 200°F.

Features: Calibration is constant and not affected by 1500-psi surge. Operating range is adjustable. Weighing only 22 oz, switch withstands 2000 lbs pressure without leakage and is resistant to explosion, corrosion and fungus. Switch must pass specification that demands operation 50,000 times at exaggerated pressure and temperature conditions, and 6-amp DC highly inductive load.

Description: Differential of Hydrol medium-pressure switch is adjustable from 5 to 25% of maximum rated operating pressure. Temperature-compensating method was developed to permit use over the wide temperature span.

Diaphragm is corrosion-resistant, heat-treated alloy formerly used only in manufacture of fine watch springs, it is reported.

Current ratings: 110 V AC—10 amps; 220 V AC—5 amps; and 28 V DC—1/4 to 6 amps inductive. Current rating increases with pressure differential. Electrical connection is AN Type connector or grommet; screw type terminals are available without cover. Pressure connection: 7/16"—20 per AND10050; 1/8" IPT per AND10053.

Source: Product of Cook Electric Company, Dept CP, 2700 N. Southport Ave., Chicago 14, Ill. . . or for more information check CP 6709 on handy form, pages 2 and 3.

### Fast sweep starting time and high light output denote oscillograph . . .

cathode ray tube is high-voltage type; has high accelerating potential

Uses: Indicates alternating current wave forms or other electrical oscillations; utilizes cathode ray tube.

Features: Instrument has improved sweep circuit, fast sweep starting time, and high light output. High accelerating potential of cathode ray tube enables observing and photographing high-speed signals — recurring either at random or at slow intervals.

Description: Type 250-AH cathode ray oscillograph employs a high-voltage cathode ray tube. Overall accelerating potential for this tube is 13,500 volts — supplied by an external power supply.

Recurrent, single, or driven sweep durations are continuously variable from 5 seconds to 10 microseconds. Cathode ray beam rests at left side of screen, resulting in negligible sweep starting time on driven sweep. On return cycle, trace is automatically blanked out; Z-axis input is provided for intensity modulation.

Input signals may be applied through AC or DC amplifiers, or directly to deflection plates for both X and Y axes. Frequency response of DC amplifiers is uniform within 10% to 200,000 cps; response of AC amplifiers is Built-in square-wave voltage calibrator provides outputs uniform within 10% from 5 to 200,000 cps.

CHEMICAL PROCESSING



This flow rate meter

## ELIMINATES "BUBBLE COUNTING"



This compact flow meter is the answer to purge line (Bubbler) control . . .

true purge rate indication,  
easily and neatly panel mounted singly or  
in multiple, requires a minimum of space.

- \$12.60 with needle control valve
  - \$9.10 without control valve
- (lower prices when purchased in quantity)

Write for catalog 30.

**FLOWRATOR** • **FISCHER & PORTER CO.**  
Trade Mark Dept. ON2-9E Hatboro, Pa.

When inquiring check CP 6710 on handy form, pgs. 2-3

**"LIQUIDS WORTH STORING  
ARE WORTH MEASURING"  
WITH A  
LIQUIDOMETER  
Tank Gauge**

WRITE FOR COMPLETE DETAILS

**THE LIQUIDOMETER CORP.**  
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 6711 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

Built-in square-wave voltage calibrator provides outputs of 0.01, 0.1, 1.0, 10, and 100 volts; calibrator is accurate to within plus/minus 5%.

Source: Type 250-AH is a product of Allen B. Du Mont Laboratories, Inc., Instrument Division, Dept. CP, Clifton, N. J. For more information check CP 6712 on handy form, pages 2 and 3.

### Evaluates strain in rubber, similar materials . . .

tester is automatic, precise; furnished complete

Uses: Strain tester measures effect of storage on elasticity of rubber and rubber-like compounds. Offers prediction of cure time for any desired percent elongation. Useful in compounding, flexure, and creep studies. Aids obtaining data for stress-strain curves.

Features: Automatic — doesn't require skilled operators; precise — eliminates variations encountered in following 2-moving bench marks simultaneously; quick — maximum operation period is 80 seconds; protective controls — buzzer warns when operation cycle is abnormal; and safe — guards are provided for electrical and mechanical components.

Description: GFB-NBS strain tester for rubber and rubber-like materials has following specifications: overall dimensions — 34" wide, 32" deep, 96" high; power supply — 115 volts AC, single phase, 60 cycle; continuous duty; and 300 lbs net weight. Tester (including 28 weights) is complete with thickness gauge, die, and benchmark.

Measures the percent elongation of a virtually motionless specimen at a definite time after the application of a pre-chosen stress (psi). Stress is obtained by loading the specimen friction-free in proportion to its thickness in millimeters. Measures to about 1000% elongation in 1% increments. Induces stresses from 50 to 400 psi with about 1% accuracy; by using additional fixed weights, stresses to 5000 psi may be obtained.

Testing procedure: 1) test specimens are die-cut; 2) subsequently gauged; 3) bench marked, and inserted between two grips of tester. Steps 4) and 5) consist of direct measurements on tester itself.

Source: Product of G. F. Bush Associates, Dept. CP, Box 175, Princeton, N. J. . . . or for more information check CP 6713 on handy form, pages 2 and 3.

### Helpful guide for users of spectrophotometers

Users of spectrophotometers will find this guide a handy tool for better understanding their instruments, for calibrating and maintaining them in proper operating condition, and for guarding against numerous errors common to spectrophotometric work. Guide represents techniques and data resulting from National Bureau of Standards' experience in spectrophotometry.

Covers instruments and methods for use in ultraviolet, visible, and near-infrared spectral regions; includes photographic, visual, and photoelectric methods. Contains definitions of spectrophotometric terms, essential parts of spectrophotometers, instruments in current use, and bibliography of 127 related references.

For 48-page Circular 484 entitled "Spectrophotometry", remit 25c direct to Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

## How to be Right the first time

### WHEN SELECTING STEAM TRAPS

No single type of trap is suitable for all applications. But one of the four distinct Sarco types will be exactly right for any given application. Some provide quicker warm ups in the morning, some extract more of the heat, some are better for fluctuating condensate loads and others are better for out of doors.

APPLICATION	1st CHOICE	2nd CHOICE
Process Tanks, small	A	C
Process Tanks, large	B	C
Dryers, Coil Type	B	A
Dryers, Fan Type	B	C
Drying Tumblers	B	A
Water Heaters	B	C
Preheaters, Fuel Oil	B	C
Rotating Cylinders	B	B
Slashers	B	B
Dry Cans	B	B
Flat Work Ironers	C	B
Presses, Laundry	C	A
Stocking Forms	C	A
Presses, Plastics	C	A
Presses, Platen	C	A
Evaporators	B	C
Steam Lines Outdoors, small	A	D

\*Ask for Technical Bulletin No. 2

### A THERMOSTATIC

Wide open when cold for quick starts. Retains more of the heat before releasing condensate. Large valve orifice purges air quickly when starting. No seat changes when pressures change. Cannot freeze. Bulletin No. 250.



### B FLOAT

Ball float allows continuous discharge without shock to temperature controls and other instruments. Automatic thermostatic by-pass takes care of air and gases without steam waste. All pressures up to 200 psi. Bulletin No. 450.



### C BUCKET

Intermittent, but very rapid — can handle large volumes of condensate. Air goes out with the condensate. All parts attached to cover provide easy inspection. Straight-through connection makes installation easy. Integral strainer inside. Bulletin No. 350.



### D LIQUID EXPANSION

A low cost combination of trapping and approximate temperature control. Ideal for outdoor tanks and lines and other points where condensate cannot be returned. In other forms, used as combination trap and control for wash tanks, food equipment, etc. Catalog Nos. 250 and 550.

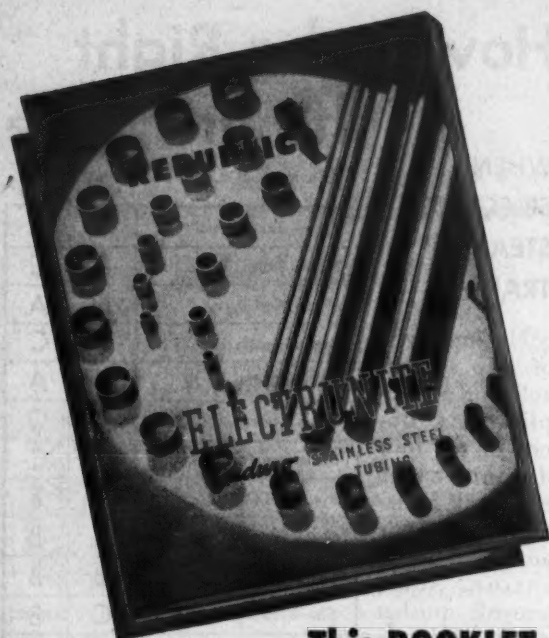


**SARCO**  
SAVES STEAM

**SARCO COMPANY, INC.**  
Represented in Principal Cities  
Empire State Building, New York 1, N.Y.  
SARCO CANADA, LTD., TORONTO 5, ONTARIO

IMPROVES PRODUCT QUALITY AND OUTPUT

When inquiring check CP 6714 on handy form, pgs. 2-3



## This BOOKLET Answers Your Questions About STAINLESS STEEL TUBING

Properties table... corrosion data... typical applications... fabricating data... tubing data tables... engineering data... these, briefly, are but some of the contents of this valuable 28-page booklet.

Whether you are a designer, engineer, purchasing agent or plant operator, you'll find it a handy reference whenever you are confronted with problems involving stainless steel tubing.

Republic Steel—world's largest producer of alloy and stainless steels—offers you this booklet without cost or obligation. Send for your copy today.

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**ELECTRUNITE®**  
STAINLESS STEEL TUBING AND PIPE

When inquiring check CP 6715 on handy form, pgs. 2-3

Page 54

## Briefs . . . from contemporary publications

Here's a quick look at interesting articles appearing in other publications.  
... as selected by Technical Editor, Harry McCormack

### Feasibility of ultrasonics in chemical processing

Comments are made on ceramic materials which can be used as generators of ultrasonic power. Tells how these ceramics may be formed to concentrate ultrasonic waves, states that lower power consumption and probable lower cost are further advantages. Discusses difficulties in applying ultrasonics to large-scale production, lists possible methods of surmounting these obstacles.

Article contains 2 pages, 2 photos. ("Petroleum Processing", Jan., 1950, page 39). Four-page article gives detailed information on uses, many references to prior work with ultrasonics. ("Chemical Engineering Progress", Jan., 1950, page 3.) Discussion of formed ceramic materials with piezo-electric properties is contained in 1-page article. ("Chemical Processing", Jan., 1950, page 39)

### Hydrogenation products from lignin

Two samples of lignin, recovered from soda-process pulping liquor, were hydrogenated. Two different catalysts were used, one at a temperature of 325°C and the other at 400°C. Products of hydrogenation were the same in both cases, but varied in amount.

Complete description of recovery and separation of products is given. Yields of various materials shown in tables. 4½-pages, 6 tables. ("Industrial and Engineering Chemistry", Sept., 1949, page 2063)

### Colorimetric determination of nitrates, nitric acid esters

Study of isomeric xylenols as reagents for colorimetric determination of nitrates and nitric acid esters is discussed.

States that 3, 4-xyleneol is the best reagent. One method is presented and necessary apparatus is commented on.

Accuracy of method was checked by using standard nitrate solutions. Results are tabulated. Effect of diverse ions present in the solution being analyzed was studied and results tabulated. Article consists of 4½ pages, 7 tables and 3 figures. ("Analytical Chemistry", Nov., 1949, page 1385)

### New ways of lining vessels against corrosion

Four methods of lining vessels against corrosion are compared with conventional method of plug welding in 5-page article. These include different methods of attaching corrosion-resistant strips to the vessel walls.

Article comments on stud welding of alloy liners to walls,

but reserves evaluation until further field testing. Describes complexity of selecting proper lining materials; points out that conditions of the specific application are the most important factors.

Five figures detail different methods. Two tables give test data and evaluations. ("Petroleum Processing", Jan., 1950, page 21)

### Continuous splitting of fat in water

Data on the reaction of tallow and cocoanut oil with water in the temperature range used in continuous fat splitting are presented in 3½-page article. Unique autoclave used for experimental work is described and a sketch is included.

Procedure used for fat splitting is discussed. Analytical methods are stated; results are shown graphically. Includes 5 figures. ("Industrial and Engineering Chemistry", Sept., 1949, page 1982)

### Agricultural residues serve as fillers in phenolics

Results of a study made to determine suitability of variety of residue flours as fillers in phenolic plastics are reported in 6-page article.

Twenty-two materials were used. Preparation of flours is described. Plastic components, methods of molding and testing are stated. Three pages of tabulated data show results as to physical and chemical properties of finished molded plastics. 3 tables, 2 graphs. ("Modern Plastics", August, 1949, page 111)

### Alloys, plastics, cements, other materials of construction

Articles covering 16 types of construction materials review recent developments in the field. Subject matter includes various metals and their alloys, carbon and graphite, cements, ceramics, plastics, elastomers, hard rubber, fiber and wood. 36 pages. ("Industrial and Engineering Chemistry", Oct., 1949, page 2091)

### Theory of fatty oil hydrogenation

Five-page article presents analysis of prior data on properties and reactivities of fatty acids of varying degrees of unsaturation.

Data are used as basis for discussion of theory of hydrogenation and catalytic action. Sample calculations are included and results are presented graphically.

Effect of operating variables such as hydrogen pressure

CHEMICAL PROCESSING



and temperature are discussed and related to the theory. Article is illustrated with 2 tables, 6 figures. ("Journal of the American Oil Chemists' Society", Nov., 1949, page 644)

#### Thermal conductivity of liquid silicones

Nine liquid silicones of the homologous series of pure trimethyl end-blocked dimethyl siloxanes were investigated to determine their thermal conductivity. Viscosity of silicones ranged from 0.64 to 12,500 cs at 25°C.

Physical properties of the fluids are tabulated. Thermal conductivities, as experimentally determined, are tabulated and compared with values computed using the proposed empirical equation. 2 pages, 3 tables and 1 figure. ("Industrial and Engineering Chemistry", Sept., 1949, page 1966)

#### Predict dropwise condensation from heat transfer data

Discusses mechanism of vapor condensing dropwise on metal surfaces. Contact angles between water droplets and metal surface were measured.

Method used for measurement is described. Equipment and methods of operation are discussed. Three metals were used as condensing surfaces.

Heat transfer data was taken while the dropwise condensation was studied. Calculations from data are illustrated by example. Article is 14 pages, includes 1 table and 11 figures. ("Chemical Engineering Progress", Nov., 1949, page 661)

#### Determining vapor pressure of petroleum fractions

Two-page article describes new apparatus for determining vapor pressure of pure or mixed hydrocarbons. Device is described; calibration, limitations, and theoretical considerations are discussed.

Results are reproducible and in close agreement with those obtained by the ASTM Reid vapor pressure method. Tells of time savings, usefulness with small samples. Illustrated with 2 figures, 1 table. ("Analytical Chemistry", Dec., 1949, page 1483)

#### Copper and chromate ions in sewage dilutions

Effects of copper and chromate ions on biological oxygen demand, as determined in sewage, are discussed in 3-page article, illustrated with 5 tables and 7 graphs.

Effects of copper were investigated in range from 0.01 to 5.00 ppm and of chromate from 0.05 to 1.00 ppm. Results are tabulated. ("Industrial and Engineering Chemistry", Oct., 1949, page 2238)

#### Modern equipment, techniques for pipe welding

Newer methods and equipment for pipe welding are discussed in 5-page article illustrated with 8 photos.

Proper preparation of welding grooves is emphasized. Comments are made specifically on submerged-arc welding and welding of aluminum piping. ("Heating, Piping and Air Conditioning", Jan., 1950, page 124)

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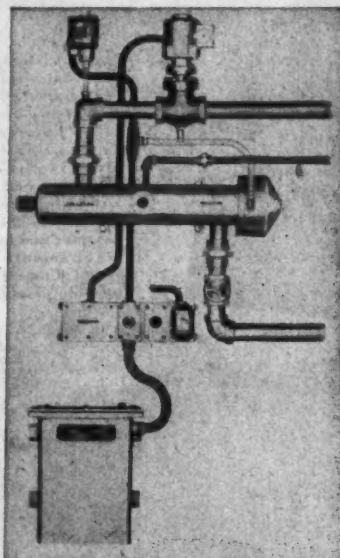
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## **NBS Develops New Time-saver for Measurement of X-ray Diffraction Patterns**

**Direct-measuring "photomicrometer" is accurate and  
easy to read; useful in measuring stress, strain**

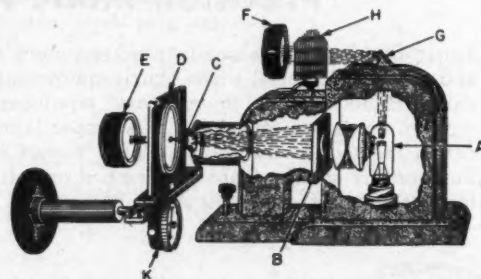
THE National Bureau of Standards has recently developed a "photomicrometer" that has saved them about 25% of the total time of measuring diffraction patterns in the last several months. The instrument retains the accuracy of the Knorr-Albers microphotometer, but does not have its two disadvantages: jagged chart record, making it difficult to locate the maximum; and excessive time required to obtain measurements.

Development of the unit stems from a previous development of the Bureau's Metallurgy Division—a sensitive X-ray diffraction technique for determination of strain in metals. One of the primary difficulties in X-ray measurement of stress or strain in metals is lack of sensitivity. This is due to the small change in diameter of the diffraction ring with change in stress, and the diffuse nature of the ring which makes precise measurement of its diameter hard to obtain.

The new instrument for measuring the rings is a direct-measuring device. A calibrating ring of known inside diameter is recorded on the film immediately after the diffraction ring. Radius of the diffraction ring is determined by measuring its distance from the inside of the calibrating ring. It is essentially a densitometer with a dial indicator to measure movement of film.

A novel feature is a curved slit in the optical system so arranged that the light beam which scans the diffraction ring is an arc having the same radius of curvature as the ring. In this way, the entire ring over an arc length of 15° is automatically integrated to determine the point of maximum density.

Referring to the diagram, light from source (A) is focused by condenser lenses onto the curved slit (B). Image of



Instrument for measuring X-ray diffraction patterns. The various parts identified by letters are explained in text

the slit, reduced 5 to 1 by 24-mm microscope objective (C), is focused on film in holder (D), and light which passes through film is measured by barrier-layer-type photocell (E).

This cell is connected in a compensating circuit with a galvanometer and a second cell (F) illuminated by light from source. Cell (F) receives its light through a prism (G) and adjusting screen (H). By this method, fluctua-

tion in galvanometer reading due to changes in intensity of source is eliminated. A fairly sharp maximum in galvanometer reading is observed when diffraction ring on a typical pattern is scanned, so that results can be reproduced within 0.01 to 0.02 mm.

Film carriage is moved until maximum density of diffraction ring is located, and reading of dial indicator (K) is recorded. Carriage is then shifted until light beam is positioned on inside edge of calibrating ring, and indicator is again read. From these readings, the radius of the diffraction ring can be calculated.

(Information on this development came from the National Bureau of Standards, U.S. Department of Commerce, Washington 25, D. C.)

### **Fingerprints of oil films may aid development of better lubricants . . .**

instrument shows pattern formed by electrons diffracted from lubricant's surface

Taking the "fingerprints" of oil surface films as thin as two-millionths of an inch may lead to development of new and improved lubricants.

This "fingerprinting" is being accomplished by engineers of the California Research Corp. at Richmond, Cal. It is made possible by a device developed by General Electric Company. This shows a pattern which is formed by electrons diffracted from the lubricant surface.

Every surface has its own electron diffraction pattern. By studying a specimen's pattern, exact nature of the surface can be determined.

Previously, the only means of studying surfaces of lubricants was by chemical analysis or X-ray diffraction. Chemical analysis, the researchers say, shows chemical composition not only of the surface to be studied but of the specimen as a whole, thus failing to distinguish minute differences in surface composition. X-rays sometimes are not diffracted by very thin surfaces, but reveal lower structures covered by undetected films.

Some oils used to lubricate moving metal parts break down to form harmful compounds. By studying electron diffraction patterns of lubricants which have been subjected to extreme friction, engineers may be able to develop lubricants with greater capacity to withstand prolonged and difficult operating conditions.

In operation, the instrument "boils off" electrons from white-hot tungsten filament. Electrons are focused into a beam by a magnetic lens. For one type of work, beam is then passed through a two-millionth inch thick specimen of oil. This produces a pattern on a fluorescent screen or on a piece of ordinary photographic film. These patterns give information about the specimen surface being studied.



In other applications of the instrument, the beam is directed at an angle to a metal surface. The crystalline surface of the metal diffracts electrons to form unique patterns which are studied and interpreted. (Electron diffraction instrument is a development of G-E General Engineering and Consulting Laboratory, Schenectady, N. Y.)

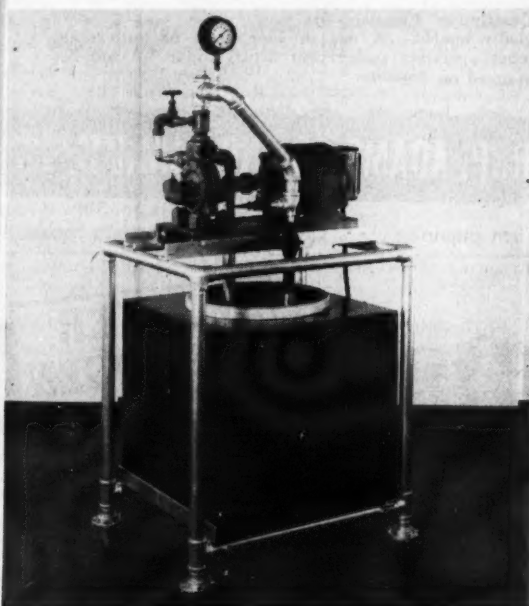
**No more corrosion troubles with self-contained water-jet pump . . .**

unit produces dependable high vacuum for distillation of high-boiling acid chlorides

Despite protective traps and frequent oil changes, mechanical oil pumps corroded and failed when used in connection with vacuum distillation of high boiling acid chlorides.

Eastern Regional Research Laboratory of the U. S. Dept. of Agriculture found that water aspirators connected to water lines did not solve the problem. Fluctuating line pressure, warm water in the line, relatively high water costs introduced equally difficult troubles.

Problem was solved by designing two water-jet pumps which utilized cooled water circulating through ejector nozzle. Motor and pump are located above earthenware



Ice in earthenware crock keeps recirculating water cool, permits achievement of pressures as low as 5-10 mm Hg

crock containing cold water. Entire unit is on wheeled base which can be moved to any desired location.

As cold water is forced through ejector nozzle at practically constant pressure, low pressures of 5 to 10 mm mercury are easily maintained. Vacuum line is connected to chamber surrounding water jet, is equipped with check valve.

Large unit has crock holding 20 gallons water, has intake line equipped with removable screen. Smaller water-jet pump has earthenware jar which holds 5 gallons water.

Tests show that 5-liter closed system can be evacuated to pressure of 5.2 mm, approximately the vapor pressure of the circulating water, in 4 min with large assembly and in 22 min. with smaller unit.

For detailed description address Dr. M. L. Fein, Eastern Regional Research Laboratory, U. S. Dept. of Agriculture, Philadelphia 18, Pa.

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✓ TURBULAIRE Spray Dryers are each engineered to the job\* in one of the most completely-equipped spray dryer laboratories in the process equipment industry—a laboratory with all the facilities necessary for detailed analytical and test operations on every conceivable type of spray dryer application. These complete laboratory facilities are important on every dryer design, whether for well-known dryer operations or for entirely new applications.

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## IDEAS

### Reduce construction costs with "sandwich" wall panels of concrete, Foamglas . . .

thin panels exclude moisture and cold; reduce frame, handling and foundation costs; can be re-used

"Sandwich" panels, less than half as thick as ordinary masonry walls, are being used in the construction of high alpha cellulose pulp plant at Prince Rupert, British Columbia. Consisting of layer of Foamglas insulation held between 2 layers of concrete, these panels may be re-used in case of building expansion.

Columbia Cellulose Company, Ltd., which owns the plant being erected, expects to overcome operating problems which would ordinarily be caused by high humidity if insulation was not installed. Panels for these walls were designed by the Celanese Corp. of America and tested at Le Ecole Polytechnique in Montreal.

Foamglas is composed of millions of tiny glass cells. It is reported that these Foamglas sandwich walls speed construction during adverse weather conditions and allow savings in foundation, erection, handling and skeleton frame costs. (Pittsburgh Corning Corp., Pittsburgh, Pa.)

### Simplified descaling process uses fused alkali bath; saves time, metal and labor . . .

used on items from stainless steel to iron castings; eliminates costly acid disposal facilities

Steel, various other metals and iron castings are now cleaned and descaled efficiently and economically by a process using a fused alkali bath. Method eliminates pitting, etching and base metal losses. Scale, silica and slag inclusions are completely removed in the shortest possible time cycles.

Fused alkali bath is first step in the process. This is a dip in what is named Virgo Salt, a mixture of salts which, when fused, has the property of chemically changing scale and other impurities on metal surfaces. These impurities can be removed in one-tenth to one-hundredth the usual pickling time with no measurable attack on the base metal.

Molten salt dip can be followed by a water quench and then by short acid treatment which removes converted scale. In the treatment of stainless steels, a subsequent brightening and passivating dip is often employed.

Over 20 different applications are now in use. Current experimental work indicates that even more applications are possible.

Although process was originally developed for descaling stainless steel, it has been found to be extremely versatile in application. Generally speaking, the process is applicable to any metal or alloy which is not attacked by molten caustic soda at 930°F, or whose physical properties are not adversely affected at this temperature.

With stream pollution laws now being vigorously enforced in many states, appropriations for expensive acid disposal facilities can be greatly reduced or eliminated through use of this method. Alkaline quench water accomplishes neutralization of most of spent acid from the process.

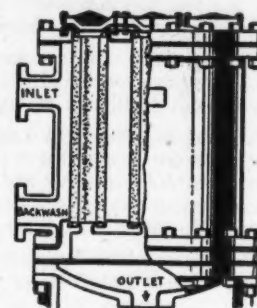
Work can be immersed in salt bath, quench and acid without special pretreatment, electric current or controlled additions to the molten salt. Immersion times are quite flexible and work can usually be processed as fast as handling operations allow.

Virgo Salt is used to make up the initial charge and is the sole additive required to replace dragout. Because of

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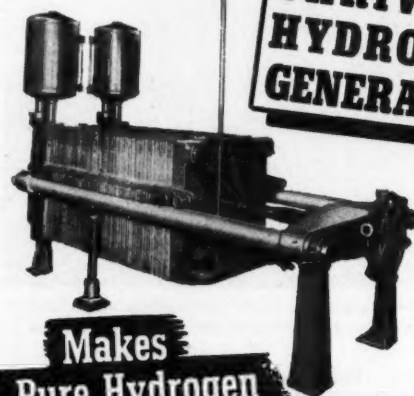
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CHEMICAL PROCESSING



this and because by nature the bath is self-regenerating, no chemical supervision is necessary. Low carbon steel tanks are used to contain Virgo Salt. Auxiliary equipment is at a minimum, consisting solely of facilities necessary to maintain operating temperatures.

Although normal operating temperature is 930°F, many descaling operations can be carried out at temperatures as low as 850°F. When drawing and descaling are accomplished simultaneously, temperatures as high as 1250°F can be used. No deleterious surface effects have yet been noted.

During standby conditions, bath may be allowed to cool to 650°F, or, if necessary, it may be allowed to solidify. Operations may be resumed at any time merely by reheating bath to desired temperature.

Types of metals and alloys now being successfully descaled include: nickel-chrome stainless steels, straight chrome stainless, stainless clad steels, nickel steels, resistance alloy steels, heat resistant alloy steels, Monel, Inconel, tool steels, Stellite, Hastelloys, silicon steels, carbon steels, N. E. steels, A. A. E. steels and wrought iron.

Metals and alloys have been processed in the following forms: rod, wire, bars, tubes, sheets, strip, clad sheet, clad strip, plates, castings, forgings, fabricated parts. (Patented descaling process utilizing Virgo Salt (registered trade name) is a development of Hooker Electrochemical Corp., Niagara Falls, N. Y.)

#### No buoyancy errors when both scoop and counterweight are made of aluminum . . .

available in 10 and 30 ml sizes, units retain constant balance at all altitudes

Variations in apparent mass between conventional 30-ml aluminum scoop and brass counterweight can amount to 0.47 mg at sea level, caused by normal variations in air density.

Bureau of Standards data also reveal that air buoyance error of 1.16 mg could result by using aluminum scoop and brass counterweight at an elevation equivalent to that of Denver, even though they were perfectly balanced at sea level.

To overcome such buoyance problems, two analytical balance scoop and counterweight sets are now produced in aluminum. Since both scoop and counterweight are of the same weight and same displacement, apparent mass is always equal at any altitude or barometric condition.

Ten-ml scoop is 7/16" deep, 2" long, weighs about 4.5 g. Thirty-ml scoop is 3/4" deep, 3" long, weighs 13 g. Scoops are made with long pouring spout, handle. Each set is serialized with corresponding numbers for easy identification where more than 1 set is being used. (Ohaus Scale Corp., Newark 8, N.J.)

#### Select floorings to withstand conditions in your plant

Industrial coatings and floorings to meet special conditions are treated in an eight-page booklet. Materials to withstand acids, water, vermin, high temperatures and heavy traffic are described. A detailed explanation of how to install various floorings is included.

Issued by Ralph V. Rulon, Inc., Dept. CP, 3900 N. 2nd St., Philadelphia 40, Pa. When inquiring specify CP 6723 on handy form, pages 2 and 3.

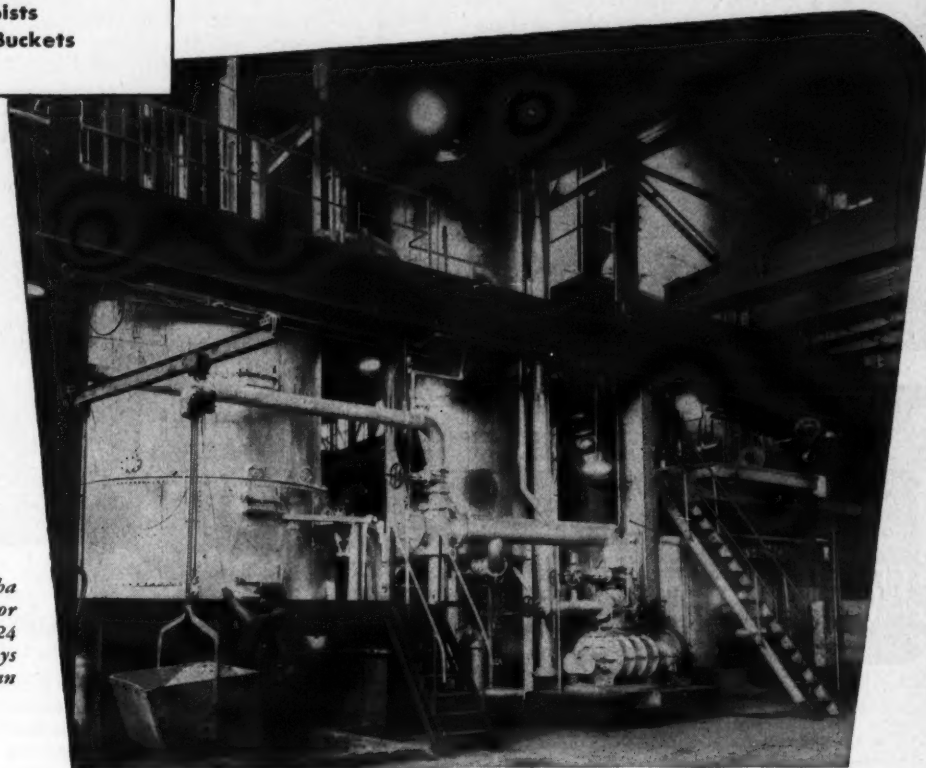
MARCH, 1950

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### New ALL-PURPOSE STEEL VALVES



A new all-purpose valve series, ideal for almost any service where small O. S. & Y. steel valves are used.

Drop forged steel for greatest strength . . . simplest packing arrangement . . . tight, easily accessible union or bolted bonnet joints . . . bronze yoke bushings . . . microscopically mated seats and disks . . . lock welded parts. Built in sizes 1/4 to 2 in. inclusive, globe or angle, screwed or socket welding ends, carbon or chromium molybdenum steels, in 600 or 1500 lb. classes. Stocks now available.

Bolted bonnet 1-1/4 in. up 600 lb., 1 in. up 1500 lb. Union bonnet in smaller sizes.

For full details, dimensions, illustrations write today for your free copy of . . . BULLETIN 501

Edward Valves, Inc.

A DIVISION OF ROCKWELL MANUFACTURING COMPANY  
EAST CHICAGO, INDIANA

When inquiring check CP 6726 on handy form, pgs. 2-3

## IDEAS

**Break tamperproof pail seals, then pull out plastic spout for non-spill pouring . . .**

manufacturers buy seats, dies to make holes in covers and embossment to receive closures

Five gallon pails are now available with a leakproof and tamperproof seal and pouring spout feature. Closure withstands greater internal pressures than the pail itself. Filled pails have been dropped 6' on the seal without breaking it.

Under the metal seal is a pouring spout of flexible Bakelite polyethylene which is resistant to most chemicals and solvents. Threaded cap of the same tough plastic is also provided.

The shipping seal is destroyed by tearing it off with a knife or similar tool, as shown in illustration (top-left view). With the threaded cap off, the airtight seal is broken by cutting

out the diaphragm molded into the spout mouth (top-right view). The flexible spout is then pulled out so that it protrudes from the pail, ready for pouring (bottom-left view).

When liquid is about to be poured, it can be seen through the translucent spout. This helps to prevent spilling and waste by confining the flow.

Furnished on both lug-covered and tight-headed pails, the seal and spout combinations are crimped on the latter in a single operation after the pails have been filled.

Spout and seal combinations are sold to pail manufacturers who make the filling holes in the pail covers and the embossments to receive the closures. (Flexaspout closures and dies are a development of Rieke Metal Products Corp., Auburn, Ind.)

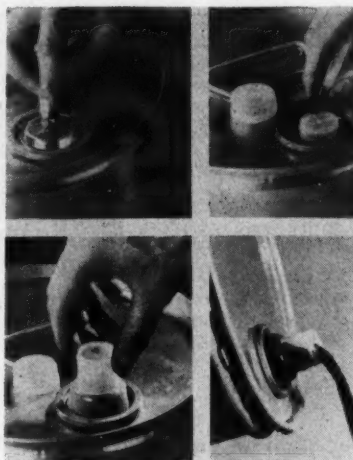
**Corrosion resistant service at 1150 or -423°F given by alloy steel castings . . .**

meet needs of chemical, oil processing industries; have increased use in valves, flanges

Alloy steel castings, developed by Lebanon Steel Foundry, fulfill extraordinary engineering requirements in corrosive service and at temperatures ranging from beyond 1150°F to 423°F below zero.

Included in these is an austenitic cast ferrous alloy, containing 19.50% chromium and 9% nickel among other constituents, which is expected to find particular applications in chemical, oil and other processing industries. It is known as Lebanon-22.

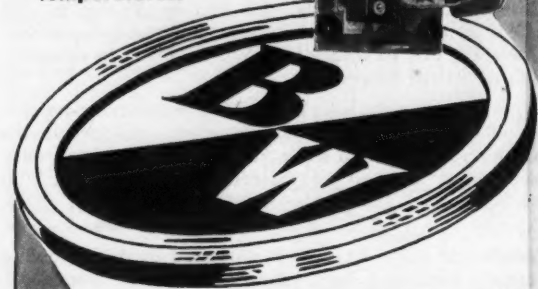
Another advanced type of high-alloy steel casting produced by this company is a 12% chromium steel, developed for rigorous high-pressure, corrosion-resistant applications in



Views l. to r.: tear shipping seal, cut spout diaphragm, pull out spout, pour

## All Electric-Floatless LIQUID LEVEL CONTROLS

**Positive! Dependable! Economical! No floats! No vacuum tubes! No moving parts in liquid. Unaffected by acids, caustics, pressures or temperatures.**



WRITE FOR COMPLETE CATALOG

**B/W CONTROLLER CORPORATION**

2212 E. MAPLE ROAD BIRMINGHAM, MICH.

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 6727 on handy form, pgs. 2-3

## MARLEY NOZZLES 3 Ways to Perfect Spray

**Atomizing Nozzle** for any service requiring a mist-like spray

**Two-Piece Nozzle** is easily cleaned without removal from piping

**One-Piece Nozzle** . . . for maximum uniform output at lowest pressure



Write for Marley Nozzle Bulletins

**MARLEY NOZZLES**

THE MARLEY COMPANY, INC. • KANSAS CITY 15, KANSAS

When inquiring check CP 6728 on handy form, pgs. 2-3

CHEMICAL PROCESSING



oil field condensate well service. Such steel castings, designed to withstand high pressures and corrosive gases, are used as standard for this type of service and are now enjoying wide use in choke bodies, main shut-off valves, oil well Christmas tree parts, other valves and valve trim, T's, elbows and blank flanges.

Many such 12% chrome-type cast steel fittings have provided perfect service for more than two years under severe corrosion conditions which, in a matter of weeks, caused total destruction of carbon and low alloy steel fittings used for similar requirements. In other fields, 12% chrome alloy steel fittings are being used to handle alcohol, ammonia, bleach, lubricating oil, steam, soap, lye and fresh water. (Lebanon Steel Foundry, Lebanon, Pa.)

#### Suggest uses for reagent in biochemical research . . .

tetrazolium salt indicates living bacteria, tests germinating capacity of seeds

Availability of ample stocks of 2,3,5-triphenyl tetrazolium chloride (designated TPTZ) in crystalline form is announced. As chemical reagent for biochemical research, practical applications for the material are suggested.

Property of the salt to act as an indicator for living bacteria and yeast cells is found useful in penicillin production. Young cells of the organism (*Penicillium chrysogenum*) which produce penicillin readily reduce the tetrazolium salt to give a red color; these young mycelia produce no antibiotic. Older cells (8 days) have little or no reducing action on the compound; these unstained mycelium are shown to yield 310 Oxford units per ml of antibiotic.

Non-fermentative variants of *E. coli* are stained by tetrazolium chloride; fermenters are not stained.

Salt may be employed as a reagent for a 24-hr test of germinating capacity of seeds — as compared with 10-day standard laboratory germination test. Has also been applied in a test for estimating the freezing-injury of seed corn.

Miscellaneous uses of the tetrazolium salt include: suitable indicator of succinic dehydrogenase activity of tissue homogenates, and as classifying test for reducing power in organic and biochemical characterizations.

TPTZ is a product of Schwarz Laboratories, Inc., Dept. CP, 202 East 44th St., New York 17, N. Y. . . . or for more information check CP 6729 on handy form, pages 2 and 3.

#### Secondary oil recovery aided by simple application of rosin amine salt . . .

surface-active agent controls corrosion, bacterial action, turbidity of flood waters

Water-flooding of oil wells in secondary recovery of crude petroleum is accompanied by great increase in corrosion. Surface active organic amine salt controls bacterial action and affords protection against the corrosive action.

Known as Rosin Amine D Acetate, the salt permits maintenance of suitable water pressures by controlling bacteria and corrosive attack. It also reduces turbidity of flood waters, thus preventing plugging of oil-bearing sands.

It is reported that no expensive equipment of complicated methods of application are required. (Hercules Powder Company, Incorporated, Wilmington, Del.)

## ALLIS-CHALMERS PROCESS PUMPS

# CUT PUMP GRIEF ON ABRASIVE AND CORROSIVE JOBS

**T**HIS ALLIS-CHALMERS PROCESS PUMP gives you many times the wear of an ordinary pump, even those made of special materials. One user had been replacing major parts in his old pump every six to ten weeks. An A-C process pump ran twenty months on the same job without repair. Here is why these savings are common:

#### UNIQUE DESIGN

Packing is on suction side. Pressure on packing is limited to suction conditions. This prevents excessive packing and shaft sleeve wear and leakage. Double volute casing balances hydraulic forces on rotating parts. Cuts vibration and eliminates pounding on operations where conditions vary, such as in pumping from filters.

Adjustment of wear between impeller and impeller wear plate may be made

without dismantling pump. Parts subject to unequal wear are separated for easy, low-cost replacement.

#### 4 MATERIALS IN STOCK

All parts are stocked in Aluminum Bronze, Ni-resist, 316 Stainless Steel and 18% Chrome Steel. You don't need to carry a spare parts stock. Only Allis-Chalmers can supply pump, motor, Texrope V-belt drive and motor control — all from one stock without waiting.

Ask your A-C Authorized Dealer or Sales Office representative to give you facts and figures on what A-C process pumps can do for you. Or write for Bulletin 08B6615.

A-2989  
ALLIS-CHALMERS, 1151A SO. 70 ST.  
MILWAUKEE, WIS.

*Texrope and Vari-Pitch* are Allis-Chalmers trademarks.

# ALLIS-CHALMERS

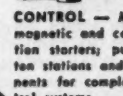
When inquiring check CP 6730 on handy form, pgs. 2-3

#### Sold . . . Applied . . . Serviced . . .

by Allis-Chalmers Authorized Dealers,  
Certified Service Shops and Sales Offices  
throughout the country.



**MOTORS** — ½ to  
25,000 hp and up.  
All types.



**CONTROL** — Manual,  
magnetic and combina-  
tion starters; push but-  
ton stations and com-  
ponents for complete con-  
trol systems.



**TEXROPE** — Belts in  
all sizes and sections,  
standard and Vari-  
Pitch sheaves, speed  
changers.



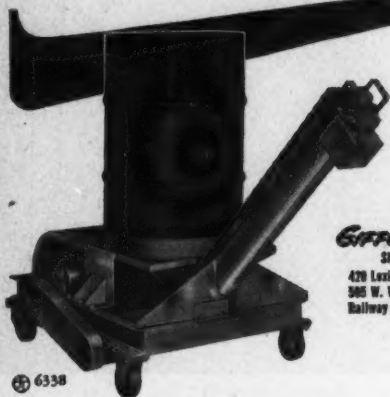
## NEW! CONVENIENT!! EASY-TO-USE!!

For metering out dry chemicals and similar materials, quickly and simply, this new G-W Portable Screw Feeder is the answer! Transfers chemicals from original container into mixing kettles at a rate of 3 to 9 cubic feet per hour.

It's ideal for getting into cramped quarters . . . can easily be rolled anywhere in the plant on its 5" ball bearing swivel castors.

There are few working parts to get out of order. Material is fed by a 4" diameter screw conveyor driven by a 1/2 H.P. variable speed motor.

Why not tell us the materials you handle? We'll be glad to give you full details on this new chemical feeder and how you can use it to advantage in your plant



**Gifford-Wood Co.**

Since 1884 • Hudson, N. Y.

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Railway Exchange Bldg., St. Louis, Mo.

6338

When inquiring check CP 6731 on handy form, pgs. 2-3

## THE MATEER ELECTRIC FILLER HANDLES THEM ALL!

LIQUIDS • OILS • POWDERS • PASTES

COMBINED LIQUIDS AND SOLIDS

1/500 oz. to 2 Pounds  
20 to 70 Per Minute  
Up to 750°F.

SAVE TIME AND MONEY  
WITH THE MATEER ALL  
ELECTRIC FILLING HEAD

Totally enclosed, manual or automatic. Accuracy as close as  $\pm 1/2\%$ . Synchronize this self contained filling head with existing production lines and processing systems.

Jacketed and electrically heated hoppers available for handling cold and hot materials up to 750°F.

Hot waxes, insulating compounds and asphalts handled without difficulty. Send full information and samples of material to be tested. Write Dept. 101 for fully illustrated bulletin.

**G. DIEHL MATEER & CO.**

Lincoln Highway • Devon, Pa.

When inquiring check CP 6732 on handy form, pgs. 2-3

## IDEAS

**Rubber roads and roofing are promising developments, say researchers . . .**

paper presented before ASME meeting reports on use of rubber as additive to road asphalt

A layer of a rubber asphalt composition only one millimeter thick protects and seals a road construction of coarse asphaltic concrete, contributing to a surface that has good anti-skid properties.

Test roads in the Netherlands, Java, England and South Africa were laid a number of years ago. A number of test strips have also been laid in this country.

In a paper presented before the American Society of Mechanical Engineers at their 1949 meeting, this development was discussed in some detail. In reviewing the advances of rubber, Lois W. Brock, G. H. Swart and E. V. Osberg of the General Tire & Rubber Co. pointed out that although such use is relatively small percentage-wise, it gives promise of utilizing large quantities of rubber.

Noted Dutch rubber technologist, Dr. R. Houwink, who visited this country last year, reported that a rubber asphalt road between Rotterdam and Amsterdam withstood heavy German war traffic. Dr. Houwink's visit accelerated this use of rubber, and construction of such roads is being undertaken in various parts of the United States.

In this development, natural rubber seems to have a definite technical edge over the synthetic product. Rubber is utilized in powder form and considerable attention has been given to rubber as a powder for various other applications. These include use as a raw material for chemical developments such as rubber derivatives and possible rubber plastics; for application as a protective covering in various types of articles and for rubber factory mixing processes.

Another rubber development cited was a roofing material in the form of corrugated sheeting containing at least 35% rubber. This is being tested in Malaya, Borneo, Java and Sumatra. It is claimed to be termite-proof and have outstanding properties of rigidity, lightness and non-corrosiveness.

Paper also gave attention to the continued contest between natural and synthetic rubber and pointed out that some 200,000 tons of capacity for production of "cold" rubber were scheduled for completion last October. It also stated that "... by development of 'cold' rubber, synthetic rubber has made a significant gain technologically. However, natural rubber has gained the commercial advantage of a lower price structure. This economic advantage has been fortified by relaxation of mandatory usage regulations governing synthetic rubber."

Impact of the American synthetic rubber industry on plantation rubber has led to intensified efforts to prepare highly purified natural rubber as well as rubbers of controlled plasticity. The latter is achieved by incorporation of chemical plasticizers in the latex at the plantation. (American Society of Mechanical Engineers, 29 West 39th St., New York 18, N. Y.)

**But one dip in plastisols gives plating racks coatings up to 1/4" . . .**

withstand prolonged service in copper, nickel and chrome solutions, high electric current

Plastisols, based on Geon paste resin #121, are protecting plating racks for prolonged periods and eliminating the necessity for multiple dippings as required in the use of

*Genuine Natural Rubber*  
**INDUSTRIAL GLOVES**

**REINFORCED SAFETY**

**NON-SLIP FINGERS — PALM-THUMB CROTCH**

**SEIBERLING LATEX PRODUCTS COMPANY**  
AKRON 9, OHIO

No. 5621  
**FIRM-GRIP**  
No. 5615  
**SMOOTH**  
LENGTH:  
14 inches  
GAUGE:  
.045-.055  
COLOR:  
Brown  
SIZES:  
10-11-12

The outstanding value and hand safety specification throughout industry. Heavy gauge, steam-cured, high age-resistance and exceptional durability with extra heavy reinforcement at points of wear. Long and short gauntlets in heavy and lighter gauge styles with all-over smooth surface also available in genuine neoprene latex.

\*Request sample and quotations.

When inquiring check CP 6733 on handy form, pgs. 2-3

**SPRACO NOZZLES**

Write for NOZZLE CATALOG to  
**SPRAY ENGINEERING CO.**  
125 CENTRAL STREET • SOMERVILLE 45, MASS.

When inquiring check CP 6734 on handy form, pgs. 2-3

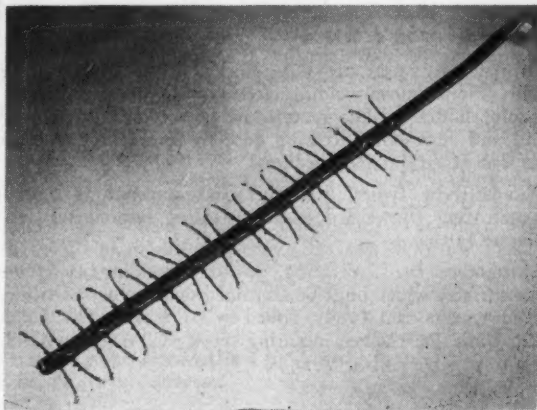
CHEMICAL PROCESSING



## IDEAS

solvent solutions. Such Plastisols are being produced by the chemical division of Michigan Chrome and Chemical Co., Detroit.

With these Plastisols, only two dippings are now required, and in many cases only one is necessary. It is now possible to single-dip and obtain pick-up weights that bracket the requirements of the dip coating industry. Through control of compound viscosity, temperature of the article dipped, and speed of dipping and withdrawal, it is possible to apply coatings with thicknesses ranging from a few mils to  $\frac{1}{4}$ " or more per dip.



Dipped and fused plating rack insulation adheres tightly, shows little effect from corrosive baths

Geon Plastisol coatings are chemical and abrasive resistant and offer controlled color choice, simplicity of processing, safety and low cost.

The plating rack shown in the photograph, according to Michigan Chrome and Chemical Company, was used for a six month period in a copper, nickel and chrome plating cycle. The copper solution was a copper cyanide type — operating temperature 120°F. In transferring from one cycle to another, the rack was immersed in both a caustic and acid solution; the caustic solution was approximately 10% with a two minute operating temperature of 212°F. The acid solution was approximately 10% at room temperature.

Formerly it was necessary to apply a minimum of seven, and in some cases as many as 10 solvent coatings to the plating rack. These coatings possessed poor adhesion to metal and often failed after two or three weeks service.

Geon paste resin #121 is produced by B. F. Goodrich Chemical Co., Dept. CP, 324 Rose Bldg., Cleveland, Ohio . . . or for more information check CP 6735 on handy form, pages 2 and 3.

### Illustrates many uses of bronze for bearings and castings

Physical properties and comparative specifications for 27 bronze alloys and 5 aluminum and manganese bronzes are detailed in an illustrated 28-page booklet on bronze and copper bearings and castings. Many bronze applications are outlined, and sizes and weights of rough and machined "Tiger" bronze bars are tabulated.

Description and uses of babbitt metals are also discussed. Catalog is issued by American Brake Shoe Company, National Bearing Division, Advertising Dept. CP, 4930 Manchester Ave., St. Louis 10, Mo. When inquiring specify CP 6736 on handy form, pages 2 and 3.

"Revere Copper Tubes are employed for HIGH HEAT TRANSFER RATES AND LONG EXPECTED SERVICE LIFE"

for

The above quotation is from a letter by the Struthers Wells Corporation, Warren, Pa., accompanying the picture shown above. The picture shows two boiler feedwater heaters, intermediate and low-pressure, made by Struthers Wells for the generating station of a large public utility. These two tube bundles contain Revere deoxidized copper tubes, made to ASTM Specification B-111. One uses  $\frac{3}{4}$ " O.D. x #18BWG tube, while the other has tube  $\frac{7}{8}$ " O.D. x #18 BWG. It will be noted that some of these tubes are bent to a small radius; superior bending quality is one of the features of Revere Copper Tube supplied for such purposes . . . In addition to copper tube, Revere offers for condenser and heat-exchanger service tubes in all the customary copper alloys, such as Admiralty Metal, Muntz Metal, the

brasses and bronzes, and the cupro-nickels . . . For true economy it is important to select the correct size and alloy to meet actual conditions of use. Revere will gladly collaborate with you in such selection, whether for new equipment, or for re-tubing.

## REVERE

### COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.

When inquiring check CP 6737 on handy form, pgs. 2-3

# Flashes from the BEACON

ASK US TO PICK A NUMBER. O.K. — 141,120,000. That's how many inches of BEACON copy came off the press in 1949. For people who like to string things end to end, it figures around 22,293 miles of type on paper. However, no single reader was exposed to more than around two and a quarter miles of it.



"He rang it first!" . . . a BEACON Original by Dave Hunt

BS&B EMPLOYEES are the only BEACON readers who get the magazine automatically. Every other name on the list represents a written request or subscription (unpaid, of course) either from the reader himself or from one of the company's sales or managerial divisions.

...

ASK US TO PICK A NUMBER. O.K. — 12,000. That's how many BEACON readers there are right now. Who reads the BEACON? A pretty representative cross section of America. Why not be 12,001 on our mailing list? It isn't hard . . . Just a request on your company letterhead will do it. Write to:

**BLACK, SIVALLS & BRYSON, INC.**  
Industrial and Public Relations Division  
Kemper Building, 720 Delaware  
Kansas City 6, Missouri

When inquiring check CP 6738 on handy form, pgs. 2-3

Page 64

## New Literature

### Replace gravity water tank with air pressure system

Hydro-pneumatic pressure systems are used to control or boost a limited supply pressure to a higher or more uniform value so that a continuous and satisfactory water supply will be available at all fixtures within the system.

This type of pressure unit has the following advantages over the older gravity tank method of water supply: it can be placed in a location convenient for installation, service or repair, it can be sheltered against damage from the elements, and since the system is completely enclosed it is isolated from possible contamination.

First part of a 30-page bulletin entitled "Hydro-pneumatic Pressure Systems" explains the design considerations of different types of units and tells where and why each should be used.

Part two deals with the determination of pump capacities and pressures, water requirements and consumption, tank working pressures and water levels, and tank sizes and capacities. Graphs, diagrams, tables, and specific examples which have been worked out, all facilitate the solution of actual, everyday problems presented by almost every type of hydro-pneumatic pressure system.

Third part treats in detail the system components, including tanks, piping and controls, and is illustrated with diagrams of typical system layouts.

Last part is devoted to pressure system auxiliary equipment such as controls, switches, valves and gauges. Tables and a monograph simplify the calculation of loss of head due to friction in pipes and also the equivalent resistance of valves and fittings to flow of fluids.

Bulletin B-579 is issued by the Peerless Pump Division, Food Machinery & Chemical Corporation, Dept. CP, 301 West Avenue 26, Los Angeles 31, California. When inquiring specify CP 6739 on handy form, pages 2 and 3.

### Fabricators find 8½% Ni alloy "fills bill", cuts cost

Fabrication of a spherical pressure-vessel — for resisting temps to minus 300°F — by welding a specially-developed 8½% nickel steel alloy, and the 50% savings attained by using this alloy in place of others is the subject of folder. Points out that Monel might have been used, but since corrosion resistance was not an objective, this 8½% Ni alloy was used to distinct cost-saving advantage.

"Welded 8½% Ni Steel For -300°F Saves 50%", issued by Alloy Fabricators Division of Continental Copper & Steel Industries, Inc., Dept. CP, Perth Amboy, N. J. When inquiring specify CP 6740 on handy form, pages 2 and 3.

### Discusses hazards, safety measures

Much technical and reference matter is included in discussion of eye and respiratory safety equipment. Subjects covered include: digest of Federal specifications for heat-treated glass; discussion of advantages and proper use of plastics in safety measures; types of filter glass available for protection against glare and radiant energy.

Other discussions cover types of respiratory hazards, proper

respirators for each, and care and maintenance of respirators. Gas mask tables show gases prevalent in industry and proper mask assemblies for different hazards.

Book contains 64 pages. Issued by Willson Products, Inc., Dept. CP, Reading, Pa. When inquiring specify CP 6741 on handy form, pages 2 and 3.

### 68 to 72 Rockwell "C" from chrome-boron electrodes

Overlay hardnesses of 68-72 Rockwell "C" are obtained with chrome-boron welding electrodes described in 4-page, 2-color bulletin. Diagrams show how high chrome steel rod and ferro-boron coating fuse to form chrome-boride deposit of exceptional hardness.

Photos show typical hard-surfacing applications, microscopic study of weld deposit. Welding recommendations are set forth.

Lists other hard surfacing, low-cost welding electrodes for surfaces which must be machined or for other particular requirements. Bul 10849, issued by Alloy Rods Co., Dept. CP, York, Pa. When inquiring specify CP 6742 on handy form, pages 2 and 3.

### Heat, cool tanks with efficient, lightweight plate units

Bulletin sets forth advantages of tank heaters composed of two formed metal plates. Shows how half-channels are formed in each plate, how resulting assembly gives heating effect of pipe coil with less weight, space.

Illustrations demonstrate simplicity of installation, show ease of cleaning. Chart facilitates conversion of linear ft. of pipe coil to sq. ft. of plate heaters, known as "Plate-coils".

Tables give complete specifications. Bul. IP-1049, issued by Kold-Hold Manufacturing Co., Dept. CP, Lansing 4, Mich. When inquiring specify CP 6743 on handy form, pages 2 and 3.

### Offer tables for figuring heat loss, requirements

Data tables for computing heat loss and figuring heat requirements are contained in bulletin. Includes tables on outdoor design temperatures, common types of industrial construction, heat losses through window and door infiltration, and a table on heating constants.

Catalogs and describes industrial heating units of 300,000 and 550,000 Btu per hour output capacity. Data File 901, issued by the Thermobloc Division, Dept. CP, East Port Chester, Conn. When inquiring specify CP 6744 on handy form, pages 2 and 3.

### Factory-install furnace parts in boiler-stoker units

Boiler-stoker combinations which have all furnace iron work factory-installed in boiler firebox are featured in 8-page, 2-color bulletin. Time for assembling exterior parts of stoker to boiler in average installations is ap-

CHEMICAL PROCESSING



proximately 1 hour. Smallest of 10 units has capacity of 326,000 Btu per hr; largest has capacity of 2,040,000 Btu per hr.

Bulletin covers boiler design, furnace ironwork, blowers, and complete specifications for each of the 10 units. Many photos are included. Bulletin No. SF-1, issued by The Brownell Company, Dept. CP, 442 N. Findlay St., Dayton, O. When inquiring specify CP 6745 on handy form, pages 2 and 3.

#### **Catalogs complete line of electric fork trucks**

Complete line of electric and gas-electric fork trucks, including specifications and dimensional drawings of each standard model, is featured in bulletin. Describes construction and operation; photos show how trucks answer many handling problems.

Truck attachments which can be readily mounted on the trucks to convert them into special-purpose handling equipment are included. Shows accessories: batteries, chargers, cushion tires, etc. Bul. No. 23, issued by Lewis-Shepard Products Inc., Dept. CP, 264 Walnut St., Watertown 72, Mass. When inquiring specify CP 6746 on handy form, pages 2 and 3.

#### **Increase production time by good plant communications**

How an intercommunication system helps cut operating costs and steps up productivity is the theme of a folder called "The New Executone". Folder briefly describes basic units to suit conditions in plant and office. Tells how system can be economically expanded as staff grows. Form 290 is available from Executone, Inc., Dept. CP, 415 Lexington Ave., New York 17, N. Y. When inquiring specify CP 6747 on handy form, pages 2 and 3.

#### **"Methods of Joining Pipe" is 236-page manual**

Available pipe joints, their advantages and disadvantages, are discussed in a 236-page book. All types are illustrated and described, including expansion joints. Data on gasket material and applications are presented.

Ten chapters cover screwed, flanged, welded and brazed joints, methods of joining cast iron pipe, and joints for: thin-wall tubes, plumbing and chemical-resistant pipe, vitreous tile and concrete pipe, transite pipe, wood pipe, and joints to permit movement. "Methods of Joining Pipe," by J. E. York. Remit \$3 direct to The Industrial Press, Dept. CP, 148 Lafayette St., New York 13, N. Y. Or, when inquiring, specify CP 6748 on handy form, pages 2 and 3.

#### **Laboratory equipment includes ovens, Warburg apparatus**

Laboratory equipment — ovens, sterilizers, Warburg apparatus, muffle furnaces, polyethylene bottles, other items — is the feature of 12-page, 2-color catalog. Items are illustrated, described; specifications and prices are included.

Number Nine, issued by Scientific Glass Apparatus Co., Inc., Dept. CP, 49 Ackerman St., Bloomfield, N. J. When inquiring specify CP 6749 on handy form, pages 2 and 3.

# "Buffalo" ~~Out of~~ Making the DUST Out of Industry!

• FOR HIGHER PRODUCTION

• FOR QUALITY CONTROL

• FOR IMPROVED WORKING CONDITIONS

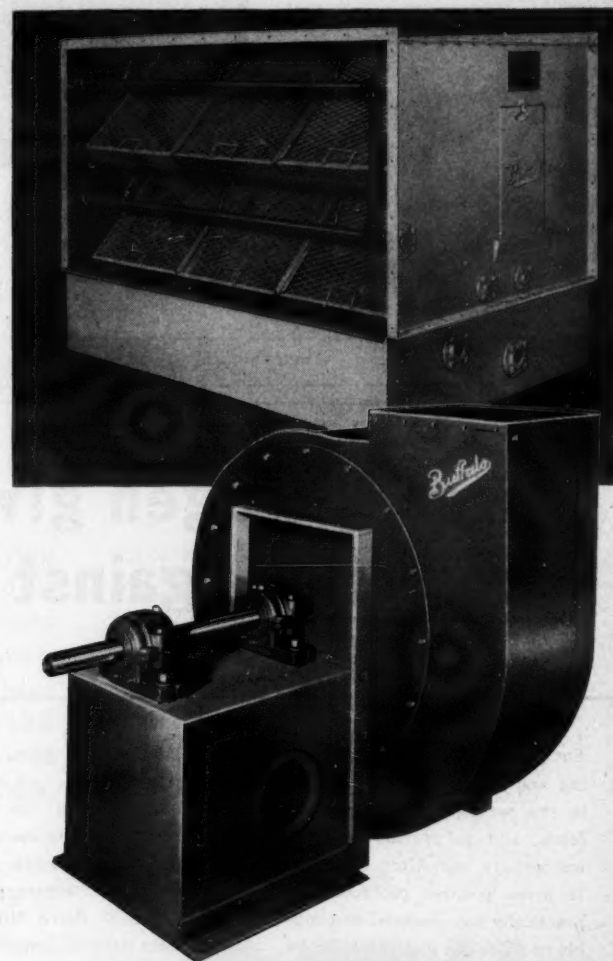
CLEAN PLANT AIR is a definite asset to your business. Not only does it help your public relations, but it is a big factor in your profit picture. And "Buffalo" has the equipment you need to do this cleaning-for-profit job ... economically ... and to the specifications you desire.

## "BUFFALO" AIR WASHERS

Where your dust content must be held relatively low, "Buffalo" Air Washers can do this job continuously with very low maintenance. For removing over 98% of visible particles, specify "Buffalo" Wet Glass Cell Air Washers, as shown at right. Both types give you humidity control. "Buffalo" Static Washers, still another type, do valuable work in salvaging by-products. WRITE FOR BULLETINS 3142-C and 345.

## "BUFFALO" INDUSTRIAL EXHAUSTERS

The low-cost answer to many a dust control problem, these exhausters have a reputation for requiring little maintenance and lasting long on the job. Sturdy, efficient all-welded design for continuous exhausting or conveying work.



## BUFFALO FORGE COMPANY

524 BROADWAY BUFFALO, N. Y.  
Canadian Blower & Forge Co. Ltd. Kitchener, Ont.  
Offices in all Principal Cities

When inquiring check CP 6750 on handy form, pgs. 2-3

## BUFLOVAK-DOPP PROCESSING KETTLES

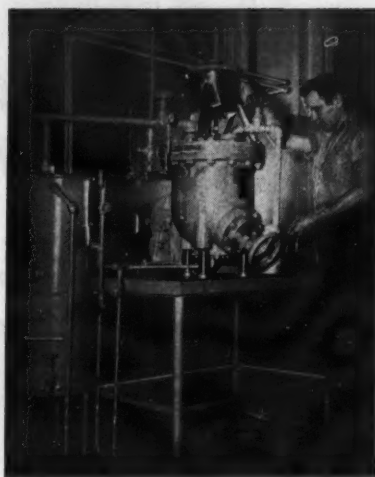
### Efficiently Serve Many Industries

**Y**OUR product can be processed in this Dopp Kettle that is installed in the BUFLOVAK Research and Testing Laboratory.

Larger equipment is also available.

Results are positive because they are conducted on a pilot plant scale.

Write for particulars.



**BUFLOVAK-DOPP** Processing Kettles are used for thorough mixing of a wide range of chemical and food products.

Performance records show considerable savings in steam, power and operating time.

Exclusive features in design and construction assure uniform mixing, heating and cooling. The result is a better, more uniform product, produced at lower cost!

Complete details upon request.

**BUFLOVAK EQUIPMENT DIVISION**  
of **BLAW-KNOX COMPANY**  
1645 Fillmore Ave. Buffalo 11, N. Y.

When inquiring check CP-6751 on handy form, pgs. 2-3

## Airco Nitrogen gives positive Protection against Air Damage

For deaerating, processing, storing and packaging fats and oils, in the packaging of dehydrated foods, and to provide an inert atmosphere, use Airco Nitrogen. It gives positive protection to practically any material susceptible to oxidation and corrosion by air.

For more than a quarter century Airco has been one of the world's leading producers and purifiers of nitrogen — as well as other atmospheric gases: oxy-

gen, argon, helium, neon, krypton, and xenon . . . all known throughout industry for their high purity, unvarying uniformity and dependable qualities. This uniformity and adherence to specifications of Airco Nitrogen are definite factors contributing to its satisfactory use.

To meet your requirements, Airco can supply nitrogen of specific types. Airco Nitrogen is supplied in 224 cu. ft. cylinders, or, if your plant is equipped with an internal pipeline, delivery in bulk may be made in Airco trailers. For further information write your nearest Airco office.



**AIR REDUCTION**  
Offices in All Principal Cities

HEADQUARTERS FOR OXYGEN, ACETYLENE AND OTHER GASES...CARBIDE...GAS WELDING AND CUTTING APPARATUS AND SUPPLIES...ARC WELDERS, ELECTRODES AND ACCESSORIES

When inquiring check CP 6752 on handy form, pgs. 2-3

### NEW LITERATURE

#### *Illustrates, specifies clutch couplings*

Clutches suitable for shaft sizes from  $\frac{3}{4}$  to  $1\frac{3}{4}$ " diam. are illustrated and specified in 2-page, 2-color bulletin. Depicts disassembled clutch, showing motor half and driven half. Each half has tapered split bushing with standard keys. Clutches are adjustable for various hp needs.

Bulletin No. T-649, issued by the Centric Clutch Company, Dept. CP, 22-26 South Ave., West, Cranford, N.J. When inquiring specify CP 6753 on handy form, pages 2 and 3.

#### *Testing facilities, methods for Fiberglass products*

"Testing Facilities and Methods Used on Fiberglass Products" is the title of a 32-page publication describing the facilities and procedures employed by Owens-Corning Fiberglass Corporation in its testing laboratories for providing accurate information on the properties, uses, and performance characteristics of Fiberglass materials in their various forms.

Includes many illustrations. Publication issued by Owens-Corning Fiberglass Corporation, Dept. CP, Toledo 1, O. When inquiring specify CP 6754 on handy form, pages 2 and 3.

#### *Principles of continuous rotary vacuum filtration*

Principles of continuous rotary vacuum filtration are outlined in 24-page, 2-color bulletin. Filters which combine short dewatering and filtering periods for maximum efficiency are illustrated and described. String discharge which lifts the filter cake in one continuous sheet from the drums is discussed. Bulletin covers compression and washing mechanism, construction features.

Includes 18 photos of installations. A pilot plant filter and 4 types of filter cloths are featured. Bulletin 103, issued by Filtration Engineers, Inc., Dept. CP, 155 Oraton St., Newark 4, N. J. When inquiring specify CP 6755 on handy form, pages 2 and 3.

#### *Features instrument for pressure, vacuum control*

Instrument designed for automatic vacuum and pressure control, known as manufacturer's Cartesian Manostat No. 6, is described in illustrated, 4-page bulletin. Includes cutaway sections showing construction, and 5 diagrammatic drawings giving directions for operation of instrument. Covers applications.

Bulletin No. CM 97, issued by The Emil Greiner Co., Dept. CP, 20-26 N. Moore St., New York 13, N.Y. When inquiring specify CP 6756 on handy form, pages 2 and 3.

#### *Record 18, 36 independent data simultaneously*

General-purpose instruments for simultaneously recording as many as 36 independent, static or dynamic, electrical phenomena on a single strip of photographic paper or film are illustrated and described in 16-page, 2-color bulletin.

Operation is similar to that of a motion-picture camera. Have galvanometers, and optical, timing, and paper-or-film-drive systems.



## NEW LITERATURE

Bulletin covers operation, features, accessories, associated equipment, as well as diagrams of, and tracings made by instruments. "Recording Oscillographs" (Bul. CEC-1500A), issued by Consolidated Engineering Corporation, Dept. CP, 620 No. Lake Ave., Pasadena 4, Calif. When inquiring specify CP 6757 on handy form, pages 2 and 3.

### **Advice on cleaning, sealing, maintaining all floor types**

Cleaning, sealing and maintenance of all types of floor surfaces are discussed in 32-page brochure. First part covers methods of cleaning and sealing, recommendations for particular installations, and general maintenance suggestions.

Second part discusses all types of floor surfaces and proper methods of maintenance of each type. Chart lists proper type of cleanser and sealer for each type.

Covering capacities of maintenance products are given. "The Proper Care of Floors", issued by West Disinfecting Co., Dept. CP, 42-16 West St., Long Island City 1, N. Y. When inquiring specify CP 6758 on handy form, pages 2 & 3.

### **Picture conveying systems employing solids-pumps**

Industrial applications of Fuller-Kinyon (solids-handling pumps) conveying systems are illustrated and described in 23-page, 2-color bulletin. Includes systems for unloading cement from hopper-bottom cars and conveying it directly to process bins; conveying pulverized phosphate rock from storage to mixing bins; unloading cement from cars and conveying to barges, many more interesting solids-pumping applications.

Describes features of these pumps; presents component equipment. Other unloading and related equipment is included. Bulletin FK-25, issued by the Fuller Company, Dept. CP, Fuller Bldg., Catasauqua, Pa. When inquiring specify CP 6759 on handy form, pages 2 and 3.

### **"Precision Barcroft-Warburg Apparatus" is bulletin**

"Precision Barcroft-Warburg Apparatus" is the title of illustrated and descriptive bulletin. Contains complete information on the standard rectangular 10-unit apparatus, on the 20-unit circular apparatus, and on the refrigerated types. Barcroft-Warburg glassware and accessories are also featured.

Issued by E. Machlett & Son, Dept. CP, 220 East 23rd St., New York 10, N. Y. When inquiring specify CP 6760 on handy form, pages 2 and 3.

### **Flow meter compensates for temp, pressure variables**

Four-page, 2-color bulletin illustrates and describes line of flow meters which automatically compensate for variations in temperature or pressure, or both, and give a chart record or indication of both corrected and uncorrected flow. Includes figures showing how corrected record is produced, and how meter is installed.

Bulletin M-51, issued by the Hagan Corporation, Dept. CP, Hagan Building, Pittsburgh 30, Pa. When inquiring specify CP 6761 on handy form, pages 2 and 3.

# this is CMH REX-FLEX

## flexible stainless steel hose



While the need rarely arises, tying CMH REX-FLEX into a knot does illustrate the high degree of flexibility of this *all-metal* corrugated stainless steel hose. And the same characteristics of stainless steel that make REX-FLEX so flexible also give it the ability to withstand extreme cycles of vibration, flexation and variplane motions.

Light in weight...high in strength... leak-proof... and highly resistant to

corrosion, REX-FLEX is the answer to the problems of handling searching and corrosive liquids and gases where there is motion.

CMH REX-FLEX is made in sizes from 5/16" through 6" I.D. Wall thicknesses from .003" in single ply to .030" in multiple plies. Available with helical or annular corrugations, with or without metal braid covering. Ends may be flanged or equipped with fittings to meet your requirements. Write for complete information.

### **CMH—ONE dependable source for every flexible metal hose requirement**

• CMH manufactures all standard types of flexible metal hose, both convoluted and corrugated, in a variety of metals; expansion joints for piping systems; stainless steel and brass bellows; various conduits and special assemblies of these components.



# CHICAGO METAL HOSE CORPORATION

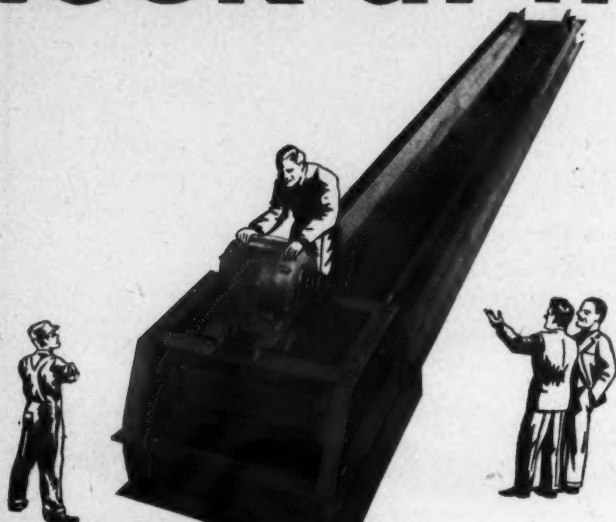
Leader in the Science of Flexionics  
1319 S. Third Avenue  
MAYWOOD, ILLINOIS

Plants at Maywood, Elgin and Rock Falls, Illinois  
In Canada: Canadian Metal Hose Co. Ltd., Brampton, Ontario

FLEXON . . . . . Identifies CMH products which have served industry for more than 47 years.

When inquiring check CP 6762 on handy form, pgs. 2-3

# every way you look at it



## AJAX

are one of your  
best Material  
Handling Answers

● Ajax Lo-Veyors give you a complete, self-contained means of conveying dry aggregates (bulk materials). The Ajax-Shaler Shaker provides a reciprocating drive which eliminates dozens of idler bearings, head and tail pulleys and eccentric shafts.

Ajax Lo-Veyors are available in open and closed pan and tubular types. They provide gas tight construction for critical processes and explosive operations.

Widely used by leading chemical, food, and other industries. Write giving outline of your requirements.

### AJAX FLEXIBLE COUPLING CO. INC.

24 English St., WESTFIELD, N. Y.

When inquiring check CP 6763 on handy form, pgs. 2-3

#### NEW LITERATURE

##### *Relates applications of chromium compounds*

Thirty-two-page handbook on chromium chemicals relates their general use and diversified applications in more than 17 industries. Covers dyes and intermediates, corrosion prevention, wood preservatives, methods for analyzing bichromate of soda.

Useful data section contains tables of equivalent weights, conversion formulas, capacities of rectangular tanks, etc. "Diamond Chromium Chemicals" handbook, issued by the Diamond Alkali Company, Dept. CP, 300 Union Commerce Building, Cleveland 14, O. When inquiring specify CP 6764 on handy form, pages 2 & 3.

##### *Handbook for users of metal-working lathes*

"How to Run a Lathe" is title of 128-page book. Covers care and operation of metal-working lathes; includes over 350 illustrations. Written in non-technical language; book treats installation and leveling of lathes, turning, boring, thread cutting, taper turning, drilling, reaming, and tapping.

Additional information includes standard tolerances for fits, cutting speeds, machinability ratings, and much more.

For revised 49th edition, remit 25c for paper binding or \$1 for imitation leather binding direct to South Bend Lathe Works, Dept. CP, South Bend 22, Ind. Or, when inquiring specify CP 6765 on handy form, pages 2 & 3.

##### *Sets forth applications for 35 solvents*

Industrial application information for 35 solvents and solvent oils is set forth in 6-page brochure. Includes distillation range, color, mixed aniline point, and specific gravity for each. Discusses evaporation rates, solvent power, handling, and explosive mixtures of solvents.

"Solvents and Solvent Oils", issued by Pennsylvania Industrial Chemical Corporation, Dept. CP, Clairton, Pa. When inquiring specify CP 6766 on handy form, pages 2 and 3.

##### *No mechanical seals in centrifugal pumps*

Vertical, self-priming centrifugal pumps are illustrated and described in 15-page, 2-color bulletin. One type has motor connected by coupling; other type has impeller mounted directly on extended motor shaft.

**CALL  
SPERRY  
FOR ANY  
FILTER BASE**

Paper, cloth, vinyon, nylon, orlon, glass and woven metals... plus other special materials... are regularly carried in Sperry's large stock of filter bases. Call Sperry today for the base you need.

**D. R. SPERRY & CO.**  
Batavia, Illinois  
Filtration Engineers  
for Over 50 Years

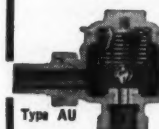
**SPERRY  
FILTER BASES**

When inquiring check CP 6767 on handy form, pgs. 2-3

## Leading Processor Shortens Operation from 65 to 45 Min.

### with Nicholson STEAM TRAPS

Records of a recent installation of Nicholson steam traps, by a large food packer, show they cut cooking time 30%;



e.g., one operation was shortened from 65 to 45 min. Nicholson units keep equipment full of live steam because: 1) they operate on lowest temperature differential; 2) have 2 to 6 times average drainage capacity. Also record low for steam waste; and maximum air-venting capacity. Widely specified for preventing damage to thin gauges; eliminates cold blow in unit heaters. 5 types for every application; size 1/4" to 2"; press. to 225 lbs.

BULLETIN 1047.

**W. H. NICHOLSON & CO.** 181 OREGON ST.  
WILKES-BARRE, PA.  
Valves ★ Traps ★ Steam Specialties

When inquiring check CP 6768 on handy form, pgs. 2-3

CHEMICAL PROCESSING



**FAST  
ECONOMICAL  
SIFTPROOF**

**BAG CLOSURES**

**SARANAC D-10"  
BAG SEALER**



**"Makes the Paper Bag a Real Package"**

SARANAC Bag Sealing Machines are designed to rapidly and economically close the tops of filled bags.

Paper bags, bags with liners, glassine bags are quickly, securely sealed on the SARANAC. The same machine may be used to close the bottoms of empty bag tubes.

A single pass through the SARANAC Bag Sealer results in a stout, sift-proof, almost hermetically sealed closure. One operator can seal as many as 75 bags per minute. Seals bags up to 10" in width.

Write for free illustrated Bulletin and ask about the SARANAC Proposition.

**SARANAC MACHINE COMPANY**  
**BENTON HARBOR MICHIGAN**

When inquiring check CP 6769 on handy form, pgs. 2-3

Specify  
**VIKING**  
For Your Future  
**PUMP  
PLANS**

Check today on your pumping equipment needs. Viking offers the most complete line in the rotary pump field. The range of sizes and styles are the largest available.

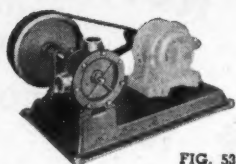


FIG. 53

Each is built to handle the specific job. Outstanding features include fast self priming . . . smooth, even discharge . . . low power requirements . . . compact and rugged construction.



Send today for free bulletin 50SCC.

**Viking PUMP COMPANY**  
Cedar Falls, Iowa

When inquiring check CP 6770 on handy form, pgs. 2-3

MARCH, 1950

**NEW LITERATURE**

Both eliminate mechanical contact-type seals. Tells how centrifugal action creates seal, how pumps prime themselves.

Bulletin includes parts lists for both types, cutaway diagrams of pumps, construction features, and operating information. Table of friction of water in pipes is presented as useful information.

Bulletin 53, issued by The LaBour Company, Inc., Dept. CP, Elkhart, Ind. When inquiring specify CP 6771 on handy form, pages 2 and 3.

**Balanced propellers  
eliminate vibration**

Propellers with accurately machined pitches for mixing, stirring, agitating, aerating, and pumping are described in 4-page, 2-color folder as assuring freedom from vibration or whipping on shaft. Shows boring, planing, and balancing operations in manufacture. Have diameters from 3 to 36".

Specifications and prices are included. "Machined Pitch Industrial Propellers" folder is issued by Michigan Wheel Company, Dept. CP, Grand Rapids, Mich. When inquiring specify CP 6772 on handy form, pages 2 and 3.

**30 pages of data  
on formaldehyde**

Comprehensive data on formaldehyde (USP) — including complete information about specifications, physical properties, uses, methods of analysis, storage and handling — are contained in 30-page, 2-color technical data brochure. Has photos, tables, graphs.

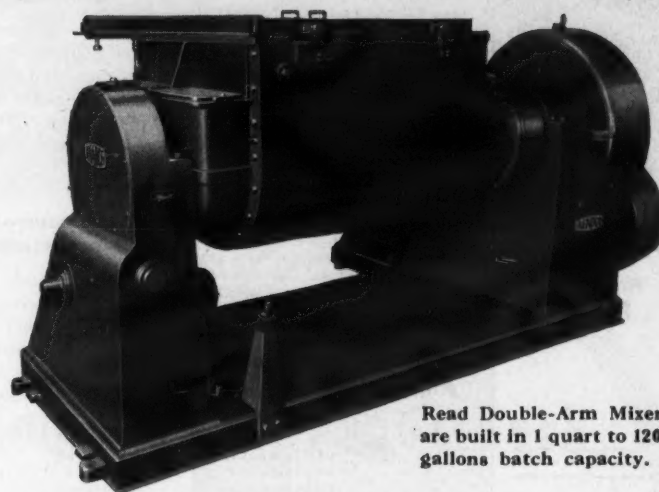
"Celanese Formaldehyde Technical Data", issued by the Celanese Corporation of America, Dept. CP, 180 Madison Ave., New York 16, N. Y. When inquiring specify CP 6773 on handy form, pages 2 and 3.

**Lists corrosion resistance  
for 5 masonry cements**

Corrosion resistance for 5 masonry cements (resin and silicate) toward 259 chemical reagents is presented in chart. Designed to aid selection of proper cement for corrosion-resistant masonry. Covers reagents from acetaldehyde to zinc sulfate.

Corrosion-resistant cement chart is issued by Special Chemicals Dept., Pennsylvania Salt Manufacturing Company, Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. When inquiring specify CP 6774 on handy form, pages 2 and 3.

**MIXING CYCLE** *Speeded Up*  
**PEAK LOADS** *MINIMIZED*



Read Double-Arm Mixers are built in 1 quart to 1200 gallons batch capacity.

**OVERLAPPING SIGMA BLADE ACTION**  
**in READ Double-Arm Mixers gives**  
**you a shorter mixing cycle**  
**with lower peak loads**



Speeding up the mixing cycle and minimizing peak loads are definite advantages in batch mixers. Overlapping sigma blade action in Read Double-Arm Mixers does both. Formation of cylinders of material about the arms is avoided. They handle even the heaviest viscous materials with ease, smoothness, and production economy.

**Some advantages:** One-piece base to insure permanent alignment and rigidity—Mixing chamber accurately machined on double-arc bottom to insure close clearance with machined arms—Vacuum mixer has single packing gland construction to eliminate contamination or oxidation—Baffled jackets for even, efficient temperature control—Heavy-duty construction throughout—Available with or without jackets, of vacuum or non-vacuum design—Single, multi-speed, or variable speed motors for plastic processes.

Write Read for literature on Double Arm Mixers. If you have a mixing problem, let us offer you our advice.

**READ**

**READ MACHINERY DIVISION**  
of The Standard Stoker Company, Inc.  
**YORK 7, PENNSYLVANIA**

When inquiring check CP 6775 on handy form, pgs. 2-3

## Is this the solution to your lubrication problems, too?

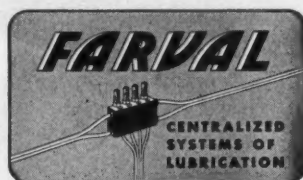


FOR more than 20 years, Farval has been saving money for users. Through efficient, dependable lubrication of machines and industrial equipment of all kinds, Farval saves 4 ways: It saves oiling labor, it saves lubricant, it reduces bearing expense, it eliminates down time.

The Farval System is a positive mechanical method of delivering oil or grease under pressure to a group of bearings from one Central Station, in exact quantities, as often as desired. It consists of a central pumping unit, two main supply lines and a measuring valve for each bearing.

Catalog No. 25 and "Case Studies" give you the facts and figures. The Farval Corporation, 3257 East 80th Street, Cleveland 4, Ohio.

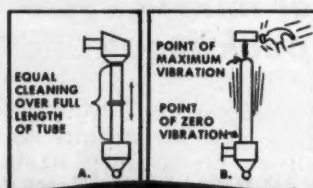
Write for these  
FREE bulletins



For personalized service:  
Write or phone, John E. Milligan,  
Cleveland exchange—VUman 8-4880.

When inquiring check CP 6776 on handy form, pgs. 2-3

## FOR MAXIMUM CLOTH CLEANING EFFICIENCY



## DAY "Autoclean" DUST FILTER

Overall cloth cleaning efficiency is assured with the DAY "Autoclean" Dust Filter because its reverse air jet mechanism cleans each tube continuously and uniformly (See A). Its action is positive, yet gentle enough so that highest quality felt filtering cloth is used.

Tougher cloth with poorer filtering qualities must be used in rapping type filters. Cleaning effectiveness varies widely from vibration point to where cloth is attached to filter (See B).

### Other DAY Advantages

- Continuous-Automatic Operation
- Constant Air Volume
- Separated Dust Streams
- High Air-to-Cloth Ratios

Write-to-DAY for  
Bulletin 491

Licensed by H. J. Hersey, Jr.



**The DAY Company**

852 3rd Avenue, N. E., Minneapolis 13, Minn.  
IN CANADA: Box 70, Fort William, Ontario  
Branch Offices in 11 World B. Road, and Wilmet, Ontario



When inquiring check CP 6777 on handy form, pgs. 2-3

## NEW LITERATURE

### Detailed information for insulating duct systems

Fiberglas insulation for interiors as well as exteriors of rectangular ducts, and exteriors of round ducts is illustrated and described in 11-page, 2-color bulletin. Sheet and flexible types are included. Gives detailed information for application to duct surfaces.

Contains physical properties and specifications of this material for insulation of duct systems. Tells how to finish-off insulated duct surfaces. Publication IN6.A1, issued by the Owens-Corning Fiberglas Corporation, Dept. CP, Toledo 1, O. When inquiring specify CP 6778 on handy form, pages 2 and 3.

### Motor controls fill 76-page catalog

Motor controls — AC and DC starters, rheostats, control relays, and contactors; speed regulators; push buttons and limit switches; accessories; and general technical information — completely fill 75-page, 2-color catalog. Includes illustrations, descriptions, principal specifications, and prices. Indexed for readily available reference.

Handy Catalog — Fourth Edition; issued by Allen-Bradley Co., Dept. CP, Milwaukee 4, Wis. When inquiring specify CP 6779 on handy form, pages 2 and 3.

### Hydraulic elevating positioners simplify material handling

Hydraulic elevating positioners, reported to simplify material handling, reduce fatigue, and insure safety, are illustrated and described in 4-page bulletin. Available in stationary types with base forks either in front or in rear, and a movable type with casters and wheels. Interchangeable attachments include universal balanced positioning arm, low-height platform, adjustable forks, and specialized fixtures.

Capacity — 1000 lbs; lowered height — 3"; elevated height—45". Bulletin 440, issued by the Lyon-Raymond Corporation, Dept. CP, 6364 Madison St., Greene, N. Y. When inquiring specify CP 6780 on handy form, pages 2 and 3.

### Treats construction of multi-layer vessels

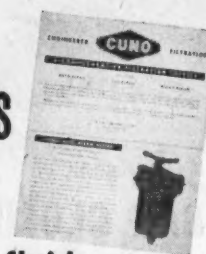
Eight-page, 2-color bulletin treats manufacture and assembly of multi-layer pressure vessels built to individual process and storage requirements. Covers multi-layer construction; gives 5 advantages of this construction over conventional single-wall. Describes and illustrates manufacture from fabrication of shell sections, through assembly, to final testing and inspection.

Bulletin No. V-52, issued by A. O. Smith Corporation, Dept. CP, Milwaukee, Wis. When inquiring specify CP 6781 on handy form, pages 2 and 3.

### Large direct current motors for heavy duty drives

Large (150 to 7000 hp) direct current motors are well illustrated in 40-page bulletin featuring such motors as used in industries requiring wide speed variations and fine speed control. A detailed description is given of "Frog-Leg"

## Send for this Important Data



### on cleaning process fluids

with the one strainer that can be  
cleaned without stopping production.

Write\* for Bulletin A-K on cleaning many types of fluids with Cuno AUTO-KLEAN.

Permanent disc-type filter element is cleanable—without stopping flow—by turning a handle, periodically by hand or continuously by motor, etc.

Guaranteed to remove all particles larger than specified. Available in special metals, spacings from .0035 to .062 in., capacities from a few to 4000 gpm.

### No Fluid Is Better than Its Filtration

**CUNO**

\*Address Cuno Engineering Corp.,  
167 South Vine St., Meriden, Conn.

**Fluid Conditioning**  
Removes More Sizes of Solids  
from More Types of Fluids

When inquiring check CP 6782 on handy form, pgs. 2-3

## NEW BULLETIN describes IMPROVED PLUG VALVE FOR CORROSIVE SERVICE



Contains full description, dimensions, and a cutaway view that shows at a glance the superior construction of this new top lubricated valve. The body of the valve is regularly made and stocked in Durimet 20. Other alloys available on special order. The plug is composite. The plug proper is of a hard corrosion resisting alloy, such as Duriron or Durichlor, and the shank is made of stainless steel.

For complete details, write today for your free copy of Bulletin 636.

THE DURIRON CO., INC., DAYTON 1, OHIO  
Branch Offices in Principal Cities



DURCO ADV. 95 GM

When inquiring check CP 6783 on handy form, pgs. 2-3



## NEW LITERATURE

armature windings, a combination wave and lap winding that gives good commutation without external cross-connectors.

Views of a new style mill-type spherical seated thrust bearing with welded-steel pedestal for heavy service are shown. Other illustrations show motors used to drive metal rolling equipment, mine hoists, paper machines, rubber mill rolls, plastics calendars, and traction equipment. Copies of bulletin 05B6002A are available from Allis-Chalmers Mfg. Co., Dept. CP, Milwaukee 1, Wis. When inquiring specify CP 6784 on handy form, pages 2 and 3.

### Use rating chart to determine efficiency of packages

Means of objectively measuring merchandising, advertising, and physical efficiency of packages is provided by a rating chart in 4-page booklet. Simplified point system for rating package on ten counts, ranging from appearance factors and use factors, through construction and legal protection, is specifically applicable to packaging for over-the-counter merchandise.

Overall picture of the type of job a package is doing is obtained by rating the package according to list of 35 questions and totaling for final score. With improvement, low score packages often realize a 10% increase in sales, without any increase in advertising or promotional literature. Areas for necessary improvement can be discovered when package is scored next to its competition at point of sale.

"Package Rating Chart" is issued by Lippincott & Margulies, Inc., Dept. CP, 500 Fifth Avenue, New York 18, N. Y. When inquiring specify CP 6785 on handy form, pages 2 and 3.

### Un-screened sewage handled by bladeless impeller pumps

Line of pumps which handle un-screened sewage and trash is illustrated and described in 15-page, 2-color bulletin. Pumps incorporate single passage, bladeless impeller capable of handling fibrous trash 10 to 25 times the size of such material passable in conventional pumps. Horizontal shaft and vertical shaft types are included; details of construction, drive modifications, principal dimensions, selection tables, performance data, typical specifications are given.

Bulletin 5400K-1, issued by Fairbanks, Morse & Co., Dept. CP, 600 South Michigan Ave., Chicago 5, Ill. When inquiring specify CP 6786 on handy form, pages 2 and 3.

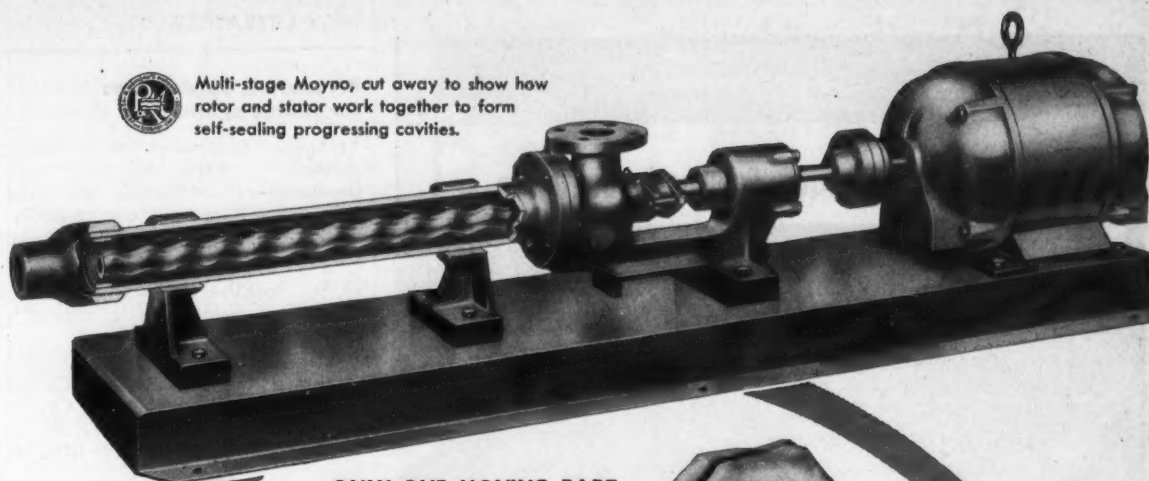
### Dry air benefits handling operations, equipment

Air conditioning process for achieving constant control of air humidity and temperature — both in winter and summer — is portrayed in flow diagram of 2-page, multi-color bulletin. Mentions advantages attained from dry air when handling and packaging materials in all seasons; points out dry air prevents condensation on equipment. Depicts conditioning equipment; includes photos of material handling operations.

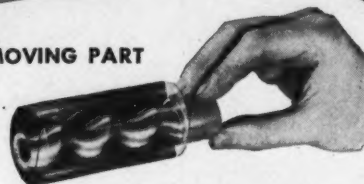
Bulletin 112, issued by the Niagara Blower Company, Dept. CP, 405 Lexington Ave., New York 17, N. Y. When inquiring specify CP 6787 on handy form, pages 2 and 3.



Multi-stage Moyno, cut away to show how rotor and stator work together to form self-sealing progressing cavities.



ONLY ONE MOVING PART



## MOYNO Pumps Don't Vapor-Lock

Moyno's "progressing-cavity" pumping—with its *positive displacement*—is ideal for volatiles. Even such liquefied gases as butane, propane, carbon dioxide, oxygen, nitrous oxide, etc., won't "flash" to cause vapor-locking. A pressure differential of 250 p.s.i., or more, can be created, when desired. The nation's largest operators use Moynos for volatile liquids because *Moynos* do the job!

### YOUR ANSWER TO ALL PUMPING PROBLEMS

The simple Moyno pumping principle is the world's most capable—*most versatile*. It handles everything from free-flowing liquids to non-pourable pastes... delivers positive pressures to 1000 p.s.i.—*without pulsation*... self-

primes with nearly perfect suction vacuum... passes particles and solids in suspension... meters flow... resists chemicals; abrasives... reverses merely by reversing rotation. The rotor-stator pumping element does *all* the work—takes *all* the wear—is easily replaceable.

### YOU NAME IT—THE MOYNO WILL PUMP IT!

Moynos work where *other* pumps won't. They have no bearings in the pumping compartment. Lubricant cannot contaminate or be contaminated. Types and sizes for all uses. Available in special materials specifications to meet specific requirements. Here's the pump that does the "impossible." What can it do for you?

**R & M**  
**MOYNO®**  
**PROGRESSING-CAVITY**  
**PUMP**

- NO PISTONS TO STICK!
- NO VALVES TO FOUL!
- NO CHURNING HIGH-SPEED IMPELLERS!

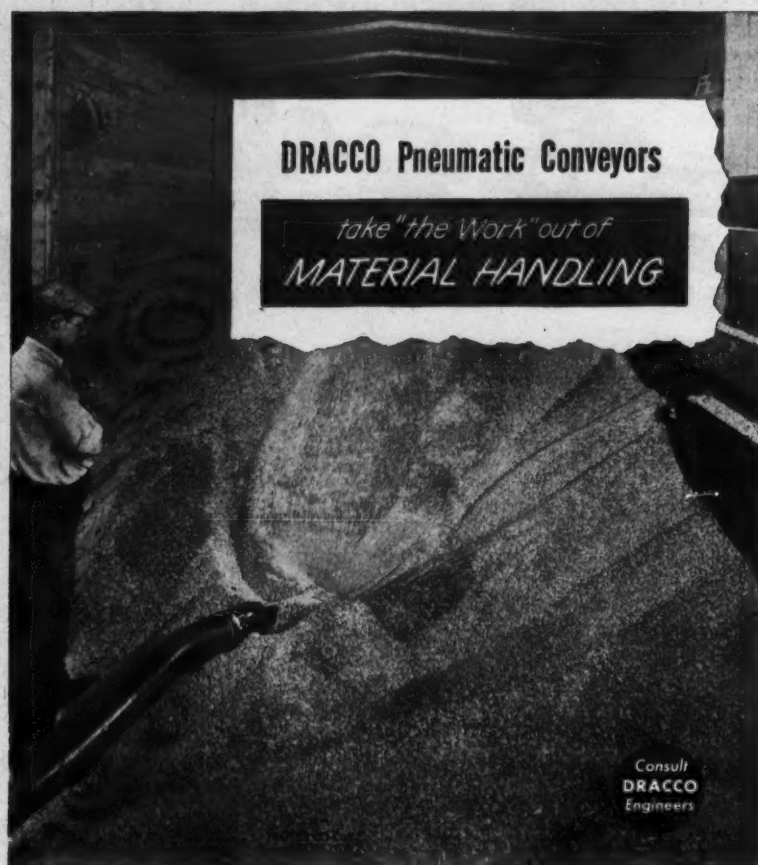
Call in your Moyno Man today, or write the Pump Division for informative Bulletin No. C-30-P.

**ROBBINS & MYERS • INC.**

SPRINGFIELD 99, OHIO • BRANTFORD, ONTARIO

MOTORS • HOISTS • CRANES • FANS • MOYNO PUMPS

When inquiring check CP 6788 on handy form, pgs. 2-3



The main reason DRACCO Pneumatic Conveyors are economical is because they take "the work" out of moving chemicals, grains and granular materials. This naturally reduces labor costs and results in substantial savings. There are also other savings, materials may be purchased in bulk at lower cost, dust hazards are eliminated, materials are not contaminated. DRACCO Pneumatic Conveyors are saving money for many. Why not have DRACCO Engineers check your handling operation? They have over 35 years' experience reducing handling costs. Perhaps they can save you money.

For Further Information Write

## DRACCO CORPORATION

4060 E. 116th St., Cleveland 5, Ohio New York Office: 130 W. 42nd St.

**DUST CONTROL EQUIPMENT**  
**PNEUMATIC CONVEYORS • METAL FABRICATION**

When inquiring check CP 6789 on handy form, pgs. 2-3

## NEW LITERATURE

### Properties, applications for textile synthetic

Technical information on a textile synthetic — staple fiber spun from copolymer of acrylonitrile and vinyl chloride — is given in 6-page folder. Covers properties, standard sizes and lengths, and textile characteristics of fiber. Suggests application in work clothing, filter fabrics, tarpaulins, diaphragms, and anode bags.

Folder F-7427 describing Dynel fiber is issued by Carbide and Carbon Chemicals Corporation, Dept. CP, 30 East 42nd St., New York 17, N. Y. When inquiring specify CP 6790 on handy form, pages 2 and 3.

### Mold variety of parts from metal powders

Applications of metal powders — iron (different grades), nickel, manganese, silicon and others — are related in 4-page, 2-color bulletin. Pictures self-lubricated parts, small gears, permanent magnets, and magnetic cores molded from metal powders. Describes properties and constituents of 7 powders.

Points out that special powders are supplied according to specifications. Bulletin 567, issued by Plastic Metals, Division of the National Radiator Company, Dept. CP, Johnstown, Pa. When inquiring specify CP 6791 on handy form, pages 2 and 3.

### Wiley offers catalog of technical publications

Recent technical publications are listed in 248-page catalog. Of special interest are sections devoted to chemical engineering and industrial chemistry, and chemistry. Author, title, physical description and price, brief statement of treatment of subject matter, and concise contents are given for each publication.

"1950 Catalog . . . Wiley Books" is issued by John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 6792 on handy form, pages 2 and 3.

### Details applications for detergent

Twenty-eight-page bulletin sets forth information on a detergent and wetting agent — an alkyl aryl sulfonate. Describes physical and chemical properties at length; gives general discussion of commercial uses. Includes 6 pages of applications in check-list form; 5 pages of detailed data con-

## Lasting Vertical Storage

More than half a century of experience has proved that Neff & Fry Concrete Stave Bins last from generation to generation with virtually no maintenance expense. They do not rust, rot, or burn. They withstand tornadoes which demolish buildings and uproot trees in the vicinity. They are not harmed by contraction and expansion.

The photograph at the right shows a small area of a Neff & Fry storage bin wall. Notice the pattern of the Super-Concrete Staves with their diagonally pointed ends. You can see that each stave interlocks with six adjoining ones; also that the steel hoops around the horizontal joints impinge directly upon the points of the staves.

Molded under hydraulic pressure, the staves are dense in texture. They have such high compression strength that superstructures are frequently built on top of N. & F. Bins without extra supports.

Almost all conceivable kinds of bulk flowable materials are handled in N. & F. Bins. The principal ones are grains, seeds, coal, coke, sand, cement, aggregates, ashes, minerals, ores.

If you do not have a stenographer or recorder at hand, make a memo, or clip this advertisement as a reminder to request complete information on N. & F. Storage Bins. Don't commit yourself to vertical storage structures before getting the facts from us.

### THE NEFF & FRY COMPANY

East Central Avenue, Camden, Ohio

**NEFF & FRY** STORAGE BINS

When inquiring check CP 6793 on handy form, pgs. 2-3

**NOT**

SLIPPERY  
WHEN WET  
GREASY  
FROSTY

**Because it's BLAW-KNOX**  
**"TWISTED BAR" Electroforged**

**Steel Grating**

Blaw-Knox Stair Treads available with rolled diamond checker plate nosing, twisted cross-bar nosing or abrasive nosing.

THE twist does the trick—twisted bar construction gives greater traction, makes slipping impossible even if the grating is wet, greasy or icy. The slightly roughened surface grips shoe soles for extra safety, yet the over-all surface is level. Trucks and other wheeled vehicles roll freely. In addition, Blaw-Knox Steel Grating is electroforged into one piece for extra strength and durability.

**OTHER ADVANTAGES:** Maximum open area for light and air. Self-cleaning, easy to maintain, economical to install.

**BLAW-KNOX DIVISION of Blaw-Knox Company**  
2076 Farmers Bank Bldg., Pittsburgh 22, Pa.

**BLAW-KNOX** ELECTROFORGED STEEL GRATING

When inquiring check CP 6794 on handy form, pgs. 2-3

CHEMICAL PROCESSING





for extra safety,  
longest wear  
**Redmont**  
HEAVY DUTY GLOVES

**NEOX**  
reinforced  
neoprene  
coated

Neoprene with toughening additives for maximum resistance to abrasion and cutting. As an extra heavy coating over strong fabric lining, Red NEOX gives safest snag-proof, liquid-proof protection against acids, caustics, solvents, oil, grease—plus longest wear.

**TEST OFFER** See your supplier or write direct for test samples, report form and prices, stating materials handled, operations, temperature conditions.

EDMONT Mfg. Co., 501 Orange St., Coshocton, Ohio.

**Edmont**  
FABRIC-LINED  
NEOX-COATED  
**GLOVES**



Also plastic  
coated  
gloves



When inquiring check CP 6795 on handy form, pgs. 2-3

**A SINGLE UNIT DOES**

**ConoAIRPAK**

**TWO  
BIG JOBS!**

**1. REGULATES  
2. FILTERS**

**AIR SUPPLY FOR  
INSTRUMENTS AND  
OTHER SERVICE**

Here's a "small package" replacement for bulky, hard to mount airsets...providing precise REGULATION in ranges 0-25 or 0-60 psi, for inlet pressures up to 150 psi...with ability to filter out particles down to 40 microns!



Investigate ConoAIRPAK for all installations requiring more efficiency...less space, installation time, maintenance and initial cost. Forged brass and stainless steel construction for corrosion resistance—simplified mounting—large capacity reducing valve with safety relief. Available in a variety of ranges, filter areas, and drip-well capacities.

**WRITE TODAY FOR BULLETIN FH-15**

**CONOFLOW CORPORATION**  
2100 Arch St., Phila. 3, Pa.

**ConoControls**

When inquiring check CP 6796 on handy form, pgs. 2-3

MARCH, 1950

## NEW LITERATURE

cerning agent's application to specific industries.

Application Data Bulletin No. P.118, issued by the Monsanto Chemical Company, Dept. CP, St. Louis 4, Mo. When inquiring specify CP 6797 on handy form, pages 2 and 3.

### **Pictures rugged scalper in service 1 1/2 years**

Machine which has been scalping rock in lumps measuring up to 5 x 5 x 4' and weighing 4 1/2 tons apiece, at rate of 110 tons per hr — 18 hrs a day for 1 1/2 yrs — without any maintenance other than lubrication, is shown in 4-page, 2-color bulletin.

Describes and illustrates scalping deck, vibrator, and vibrated frame of this heavy-duty material handling equipment. Bulletin No. 131, issued by the Robins Conveyors Division, Hewitt-Robins Inc., Dept. CP, Passaic, N. J. When inquiring specify CP 6798 on handy form, pages 2 & 3.

### **Specifies constant, and variable flow pumps**

Four models of a constant delivery pump (flange or base mounted) with capacities ranging from 3 to 6 gpm at 1800 rpm, and 2 models of a variable delivery pump (flange or base mounted — manually controlled) with capacities to 6 gpm at 1800 rpm are illustrated and specified in 4-page folder.

Includes brief description of larger pumps; hydraulic motors, power units, cylinders, and high pressure valves are mentioned. "Superdraulic Junior" folder, issued by Superdraulic Corporation, Dept. CP, 14256 Wyoming Ave., Detroit 4, Mich. When inquiring specify CP 6799 on handy form, pages 2 and 3.

### **Rapid photometric test for Cr in 18/8 steel**

Theoretical aspects and detailed procedure for a rapid photometric method of determining chromium in 18/8 and similar steels are described in 6-page paper. Consists essentially of dissolving steel and measuring absorption directly with photometer.

Standard deviations for determinations on Bureau of Standard steels was less than plus or minus 0.15%. "A Rapid Photometric Method for the Determination of Chromium in 18/8 and Similar Steels", issued by the Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 6800 on handy form, pages 2 and 3.



## A sparkling clear filtrate... **FASTER...AT LOWER COST** with Niagara **Stainless Steel Filters**

Niagara stainless steel filters give you complete, sparkling filtrate clarity, at rates two to five times as high as conventional cloth-covered filter presses—and at lower over-all cost. That is why more process engineers are choosing Niagaras than ever before.

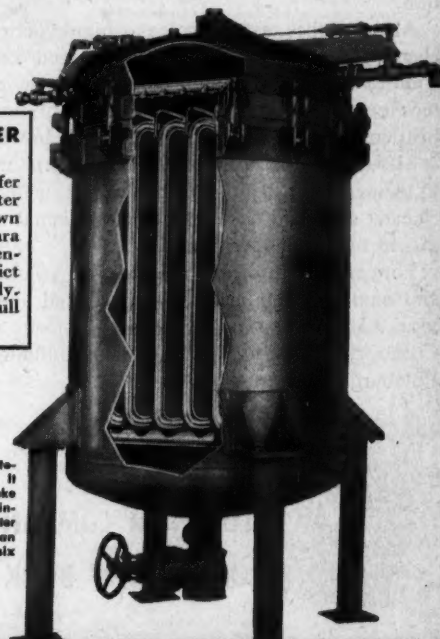
The totally enclosed, leakproof Niagara Filter requires NO CLOTHS to handle, wash or replace. There is almost no wear on the all-stainless-steel filter leaves, which provide up to 500 square feet of filter area in one compact unit. Maintenance is virtually eliminated, since there are no moving parts.

Niagara filtration engineers would like to help you get the answers on any process involving clarifying filters. Their experience can be helpful to you in getting improved quality, increased production, and lower maintenance and labor costs. Just write, describing the problem, and you will receive a prompt reply. Be sure also to ask for Bulletin G-447.

### **PILOT FILTER RENTAL**

Should you prefer to conduct filter tests in your own plant, a Niagara pilot filter will enable you to predict results accurately. Ask us for full details.

The new Niagara "Auto-Sluc" is self cleaning. It permits fast automatic cake removal and disposal, increases productive filter time, and enables one man to handle as many as six filters at one time.



**Niagara Filter**  
CORPORATION

3083 MAIN ST., BUFFALO 14, N.Y.

When inquiring check CP 6801 on handy form, pgs. 2-3



# Alcoa Heat Exchanger News



PUBLISHED BY THE ALUMINUM COMPANY OF AMERICA

## HEAT EXCHANGER SAVINGS \$50,000

**Many plants now save  
up to 80%  
of their tube costs!**

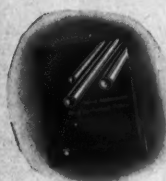
A switch to Alcoa Aluminum Heat Exchanger Tubes can save 30%, 50% or 80% of your present tube expense, depending upon the type of tubes you now use. This amounts to a yearly savings of about \$50,000.00 for the representative chemical plant:

Roll-in of Alcoa Tubes is easily accomplished with standard tools and equipment. And aluminum's lightness speeds installation and fabrication.

Alcoa Tubes safely process hundreds of chemicals. Stand up in most fresh and salt cooling waters. Aluminum tubes increase in tensile, yield and show no evidence of embrittlement in sub-zero applications as low as -320°F. They successfully handle steam up to temperatures slightly over 400°F. Their heat transfer and fluid flow characteristics equal or exceed tubes of other metals.

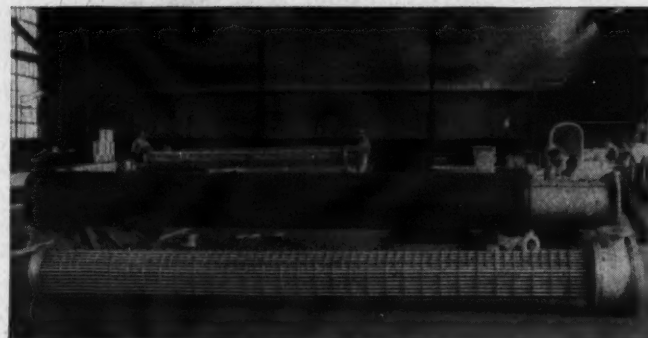
For complete information about Alcoa Tubes and name of your nearest supplier, call your local Alcoa sales office. Or write: ALUMINUM COMPANY OF AMERICA, 1491C Gulf Building, Pittsburgh 19, Pennsylvania.

★ ★ ★



**ALUMINUM COMPANY  
OFFERS NEW BOOK**

This new, 24-page booklet will answer many of your questions about Alcoa Tubes. It covers fabrication techniques . . . alloy selection . . . applications both chemical and petroleum. It describes tube cleaning, the use of inhibitors and methods of cathodic protection. It contains complete information on fluid flow and heat transfer characteristics, plus tables of physical properties and specification data. Write for your free copy, today. ALUMINUM COMPANY OF AMERICA, 1491C Gulf Building, Pittsburgh 19, Pennsylvania.

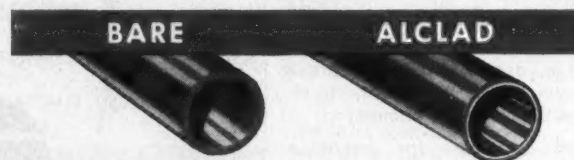


## ALUMINUM TUBES LAST 20 YEARS IN CHEMICAL HEAT EXCHANGERS

In 1927, little was known about the service life of Alcoa Aluminum Heat Exchanger Tubes. But Hercules Powder Company was impressed by the recommendations of Alcoa's engineers. They installed Alcoa Tubes in their rosin producing plant at Brunswick, Georgia. For 20 years, these Alcoa Tubes withstood attack by cooling waters and furfural gasoline mixtures. They never corroded. In fact they proved doubly effective. Color control is very important in rosin production. These Alcoa Tubes never discolored or contaminated the product.

This case history is typical of the service data Alcoa offers for literally hundreds of chemical and petroleum applications. Consult your local Alcoa sales office, or write Alcoa direct.

## TWO TYPES OF TUBES NOW MADE BY ALCOA



Now you can select the type of Alcoa Tube that best suits your application. Bare for product to product service. Alclad (inside) for contact with cooling waters. Both cost less than tubes of any other metal. Both offer additional savings in fabrication and installation.

## NEW LITERATURE

### Catalogs large variety of steel windows

Details of steel windows are contained in 36-page handy reference bulletin. Types include architectural and commercial projected, pivoted (screened and non-screened), intermediate casements, security, detention, continuous, and mechanical operators. Of special interest is space devoted to cross sections of components — clearly representing construction for each type. Steel doors are also featured.

Descriptions, photos, diagrams, dimensional specifications are included. A.I.A. File No. 16-E, issued by The William Bayley Co., Dept. CP, Springfield 99, O. When inquiring specify CP 6803 on handy form, pages 2 and 3.

### Steam when it's needed from self-contained boilers

Self-contained boilers, oil-fired, gas-fired and combination, are pictured and discussed in 12-page, 4-color brochure. Includes photos of 13 installations, pointing out flexibility of use, cleanliness, compactness.

Describes 4-pass construction, tells of ready availability of steam when it is needed. Units are available in sizes from 15 to 500 hp at 15 to 200 psi. Boilers from 15 to 150 hp can be furnished with fully automatic ignition; those ranging from 80 to 500 hp are supplied with semi or fully automatic ignition if desired.

Provides dimensions, shows how all models give high thermal efficiency. "Self-contained Steam Boilers", issued by Cleaver-Brooks Co., Dept. CP, 326A E. Keefe Ave., Milwaukee 12, Wis. When inquiring specify CP 6804 on handy form, pages 2 and 3.

### How electronic controls have solved production problems

"Cutting Production Costs with Electronic Controls" is a 64-page bulletin which reports on 45 case studies in which industrial control problems have been solved through the use of electronics.

Applications are of general interest and include can liner inspection, counting, diaphragm valve control; door operation, filling, flame failure safeguarding, foam control, inspection, label cutoff, liquid level control, liquid flow metering, smoke indication.

Each application is concisely described and references provided in case further information is desired. Issued by Photoswitch Incorporated, Dept. CP, 77 Broadway, Cambridge 42, Mass. When inquiring specify CP 6805 on handy form, pages 2 and 3.

### Increase machine life with vibration absorbers

Vibration absorbers — described as increasing machine life, retarding deterioration of structures, and eliminating noise transmission — are illustrated and discussed in 4-page, 2-color catalog. Serve as mounting feet for machine units; consist of 2-part housings (separated by resilient inserts) which retain as many as 9 hard-drawn springs, depending on load to be carried. Pressure applied to springs is adjustable. Largest of 6 types has load carrying capacity of 12,000 lbs.

Includes dimensional data, capacities, applications, diagrams, and photos of typical installations. Catalog LK

CHEMICAL PROCESSING

When inquiring check CP 6802 on handy form, pgs. 2-3



## NEW LITERATURE

551, issued by The Korfund Company, Inc., Dept. CP, 48-13E Thirty Second Place, Long Island City 1, N. Y. When inquiring specify CP 6806 on handy form, pages 2 and 3.

### Measures temperatures to 4000°F without contacting hot body

Principles of radiation pyrometry are briefly treated in 12-page catalog on radiation pyrometers. Photographs and diagrams show how radiation unit and accessories are used for indicating, recording and controlling temperatures in furnaces and kilns without contacting hot material.

Indicators, recorders, and controllers which can be used with the radiation sensing unit are also pictured and discussed. Bulletin P1242 is issued by The Bristol Company, Dept. CP, Waterbury 20, Conn. When inquiring specify CP 6807 on handy form, pages 2 and 3.

### Gives description, flow sheet of solvent extraction plant

Functional description and flow sheet of a typical solvent extraction plant are included in 8-page, 2-color bulletin. Discusses features of solvent extraction plants — outdoor installation eliminating fire hazards and costly buildings, and remote control devices located in conveniently located control rooms, etc. Many installation photos are presented.

Manufacturer provides single pieces of processing equipment, as well as complete solvent extraction plants. "Anderson Solvent Extraction Equipment", issued by The V. D. Anderson Company, Dept. CP, 1966 W. 96th St., Cleveland 2, O. When inquiring specify CP 6808 on handy form, pages 2 and 3.

### For drying under vacuum without agitation

Vacuum shelf dryers described in 4-page booklet are designed to dry heat-sensitive materials at a uniform, low temperature without agitation. Such materials as salts, fine chemicals, dyes, rubber, explosives, glues, and pharmaceuticals can be handled in this type of dryer. Standard dryers are heated by either steam or hot water.

Sizes and specifications are tabulated. Bulletin No. 701 is available from F. J. Stokes Machine Company, Dept. CP, 5900 Tabor Road, Philadelphia 20, Pa. When inquiring specify CP 6809 on handy form, pages 2 and 3.

### Valve specifications given in condensed catalog

Condensed catalog of 70 pages gives descriptions and specifications of pressure regulators, altitude valve, pump governors, strainers, lever operated valves, pilot valves, relief valves, steam traps, air vents, liquid level controllers, solenoid valves, and transmission units for liquid level controllers and control valves.

Drawings are used to illustrate operation and features of each valve. Includes three pages of useful capacity charts for regulators, and conversion tables for specific gravity. Condensed catalog A-50 issued by Davis Regulator Company, Dept. CP, 2541 S. Washtenaw Avenue, Chicago, Ill. When inquiring specify CP 6810 on handy form, pages 2 and 3.

NOW

# Dial

YOUR

## INFRARED HEAT



Inconel-sheathed Chromalox Tubular element operates at 1400°F. Unit is only 2" deep and available in 25", 31", 47", 62", 74" and 86" lengths, ready-to-install.

## WITH CHROMALOX ALL-METAL Electric Radiant Heaters

Uniform, exact heat when you want it is yours at the turn of a dial when you use CHROMALOX Electric Radiant Heaters as your heat source for infrared drying, preheating, baking, curing, dehydrating and similar applications.

Quickly and easily installed CHROMALOX Radiant Heaters give uniform heat without hot spots; operate efficiently in low and high ambient temperatures; provide glareless radiation in wave lengths absorbed more efficiently by all colors, textures and surfaces. All-metal construction enables units to withstand shock, vibration, dust, moisture; and eliminates hazards of contamination.

Write today for details on how flexible and dependable CHROMALOX Radiant Heaters can save time, materials and money in your plant.

### DIALED INFRARED HEAT WILL GIVE YOU ALL THESE ADVANTAGES . . .

#### EXACT HEAT CONTROL

Finger-tip control at the turn of the input controller knob assures consistent, exact operating temperatures every time!

#### PRECISE DUPLICATION

It's easy to duplicate required working temperatures day-in and day-out without guesswork by setting the input controller dial to the logged temperature point.

#### QUICK CHANGE-OVERS

Within a few minutes after the input controller is reset, you have a new heat to meet changed temperature requirements.

#### MULTI-PURPOSE or ZONED OVENS

Various zones of heat are possible within the same oven by setting up separate controls for each bank of units. Then each bank can be individually controlled by its own dial.

# CHROMALOX

*Electric Heat*  
for Modern Industry

## FACTS ABOUT APPLICATIONS USING CHROMALOX RADIANT HEATERS

Many plants, faced with increasing production costs, have substantially cut working time and costs by using Chromalox Electric Radiant Heaters. If you use heat in your plant for processing, perhaps, you too can benefit by changing to Chromalox Electric Radiant Heat. Look over the typical applications below . . . then send for the full story about this modern heat source.



#### Application Report 101:

**LESS FLOOR SPACE—SAFER OPERATING CONDITIONS** are features of a Radiant Heater installation that also provides faster, continuous production for forming soft balls in heated metal molds.



#### Application Report 102:

**SPEEDIER DRYING, NO HOT SPOTS** with Chromalox Radiant Heaters result in complete and uniform drying of plastic powders in 10-15 minutes, compared with half-hour with previous heating method.



#### Application Report 104:

**NO DISCOMFORT FOR OPERATOR** of punch press while punching holes in plastic strip material. Radiant Heater is used to maintain proper temperature in strips between preheating oven and press.



#### Application Report 105:

**OPERATING IN HIGH AMBIENT TEMPERATURES**, Chromalox Radiant Heaters provide a more efficient method for more uniformly knitting asphalt to battery cases. Variable control adjusts heat to battery heights.



#### Application Report 109:

**NO GLARE TO ANNOY PERSONNEL** is one feature of Chromalox Radiant Heaters used to dry a cement seal in base of television tubes. Heaters operate on an open conveyor.

## Get the complete RADIANT HEATER

### Application Report

Yes . . . send me full details on Chromalox Radiant Heaters.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_  
State \_\_\_\_\_

Mail to: EDWIN L. WIEGAND COMPANY  
7517 THOMAS BOULEVARD  
PITTSBURGH 8, PA.

IC-46

When inquiring check CP 6811 on handy form, pgs. 2-3

SAFETY EQUIPMENT FOR ALL INDUSTRIES

**TOUGH  
AND  
LONG WEARING**

## WHALE-HIDE GLOVES

Marked superiority for protection against acids, oils, solvents and abrasion. Used in thousands of industries.

Made in the curved finger design to conform with the natural shape of the hand. Full assortment of weights and lengths to meet your requirements.



Write for bulletin AB-30



*Safety Equipment for all Industries*

**INDUSTRIAL PRODUCTS COMPANY**

2814 N. FOURTH STREET • PHILADELPHIA 33, PA.

When inquiring check CP 6812 on handy form, pgs. 2-3

## NEW LITERATURE

### Tells use of strain gauges in stress analysis

Twelve-page, 2-color bulletin tells how to select and how to use a line of bonded resistance wire strain gauges in stress analysis. Explains fundamentals of simple and practical strain gauge circuits and instruments — illustrating 8 circuits and 8 different types of instruments. Includes Wheatstone bridge control boxes, automatic self-balancing indicators and recorders, and switching units for multiple gauge installations.

Bulletin contains derivations of formulas for computing simple dynamic circuits and Wheatstone bridge circuits; includes examples of these computations. Bulletin No. 279-A, issued by The Baldwin Locomotive Works, Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 6814 on handy form, pages 2 and 3.

### Varnishes for electrical assemblies is treatise

"Practical Factors in Applying Insulating Varnishes" is title of illustrated, 12-page booklet. Author treats 3 basic requirements to be expected from varnish in impregnating and protecting electrical assemblies; basic chemistry underlying curing of electrical insulating varnishes; air-drying insulating varnishes; evaluation of test methods; necessity for correlating standard testing procedures with production requirements; newer developments; and testing varnished insulation.

Three figures, 4 tables are included. Remit 25c direct to V. W. Palen, Bureau of Public Information, New York University College of Engineering, New York 53, N.Y. When inquiring specify CP 6815 on handy form, pages 2 and 3.

### Many wire cloth, screen requirements filled

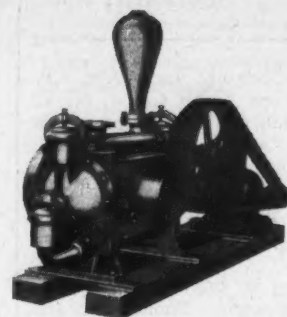
Wire screens and cloth are feature of 31-page, profusely illustrated booklet. Includes heavy industrial screens used in mining operations, to finer meshes where minute screening and separation are required. All grades can be woven from any metal that can be made in rod or wire form. Pictures many standard and special weaves; gives mesh and wire sizes. Strainer discs and rings, wire filter fabrics, custom-built wire cloth parts and components, roll and piece stock, and specialties processed to fit customer needs represent manufacturer's line.

Photos show products in process of manufacture. Industrial wire cloth and screens booklet, issued by Ludlow-Saylor Wire Co., Dept. CP, St. Louis 10, Mo. When inquiring specify CP 6816 on handy form, pages 2 and 3.

### Includes capacity chart for line of steam traps

Comprehensive information on steam traps is contained in 37-page, multi-color booklet. Features line of blast traps for low pressure heating, standard traps for general service, and forged steel traps for high pressures. Illustrates, describes, and points out features of the inverted bucket mechanism common to these traps.

Includes capacity chart for traps — plotting pounds of condensate discharge per hour vs. differential pressure through trap in psi. Application information, trap selection, many diagrams and photos, specifications, and useful



## SHRIVER DIAPHRAGM PUMP Cuts Maintenance Costs Way Down

✓ No Stuffing Box.

✓ No Leakage—No Loss.

✓ No Wear on Working Parts.

✓ Costs Less to Operate.

✓ Easier to Maintain.

Imagine how long any ordinary pump would last, for example, handling hot glue plus emery! But because this highly abrasive material is confined to the

liquid ends and does not come in contact with the working parts, the Shriver Diaphragm Pump design limits the abrasive action to only a few, inexpensive, easily replaceable parts. Thus, on "tough-to-handle" fluids the Shriver Diaphragm Pump gives long life, economical service instead of being scrapped because of excessive wear. Bulletin 126 tells an interesting pump performance story. Get a copy.

**T. SHRIVER & COMPANY, INC.**  
846 HAMILTON ST. HARRISON, N. J.

When inquiring check CP 6817 on handy form, pgs. 2-3

## HOW TO PATCH FLOORS

.... While Traffic Rolls

Here's a new, fast way to patch broken concrete without having to close off the area. Use durable INSTANT-USE. Nothing else to buy! A tough, plastic material which you simply shovel into hole — tamp — and run traffic over immediately. NO WAITING. Bonds tight to old concrete. Makes smooth, solid, heavy-duty patch or complete overlay. Withstands extreme loads. Keep a drum on hand for emergencies. Immediate shipment.

Mail Coupon for Free Trial  
Offer and Hand Book of  
Building Maintenance



**FLEXROCK COMPANY**

3611 Filbert St., Phila. 4, Pa.  
Offices in Principal Cities

Please send me complete INSTANT-USE information, details of TRIAL ORDER PLAN, and Hand Book of Building Maintenance — no obligation.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_

When inquiring check CP 6813 on handy form, pgs. 2-3

**LESLIE**  
floatless  
LEVEL CONTROL

for BOILERS, TANKS,  
EVAPORATORS, HEATERS,  
STANDPIPES, etc.

A rugged, accurate  
control designed to  
overcome the limitations of floats,  
staffing boxes,  
float cages, ball  
floats, hangers,  
range tubes,  
etc.

A simple solution  
to a troublesome  
problem

SEND FOR floatless level  
control leaflet.

**LESLIE**  
CO.  
FIFTYTH ANNIVERSARY

281 Grant Avenue, Lyndhurst, New Jersey

PRESSURE REDUCING VALVES • PRESSURE CONTROLLERS  
PUMP GOVERNORS • TEMPERATURE REGULATORS  
SELF CLEANING STRAINERS • LESLIE-TYFON WHISTLES

When inquiring check CP 6818 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## NEW LITERATURE

engineering data are given. Form 168-35-149, issued by the Armstrong Machine Works, Dept. CP, Three Rivers, Mich. When inquiring specify CP 6819 on handy form, pages 2 and 3.

### Valves and fittings are completely jacketed

Line of valves is completely jacketed to facilitate handling fluids which solidify at room temperature. Includes gate, globe, and check types in sizes to 4" — flanged styles. Suitable for handling many corrosives.

Four-page, 2-color bulletin shows cutaway sections, describes, and specifies these valves. Recommends service for which valves are applicable. Features jacketed fittings — tees, and 90° elbows. Bulletin No. 3, issued by Alloy Steel Products Company, Inc., Dept. CP, Linden, N. J. When inquiring specify CP 6820 on handy form, pages 2 and 3.

### Tables aid in selecting tractors and fork-lift trucks

Catalog of 8 pages covers gas-powered fork-lift trucks, towing tractors, dump tractors and battery-powered fork-lift trucks as well as attachments and devices. Detailed specifications as to dimensions and capacities are given in tables.

Drawings illustrate each type and also the many attachments which can be used in conjunction with the fork-lift trucks. Available from Clark Equipment Company, Industrial Truck Division, Dept. CP, Battle Creek, Michigan. When inquiring specify CP 6821 on handy form, pages 2 and 3.

### Offer Vol. IV of "Encyclopedia of Chemical Technology"

Volume IV of "Encyclopedia of Chemical Technology", now available, is described in folder. Contains approximately 960 pages —  $7\frac{3}{8} \times 10\frac{3}{8}$ ". Folder lists 34 topics covered — cineole to dextrose inclusive. Volume is 4th in series of 12; 8 further volumes will appear at 7-month intervals. Volumes I, II, and III are included in description.

For folder on Vol. IV of this series, write Interscience Publishers, Inc., Dept. CP, 215 Fourth Ave., New York 3, N. Y. When inquiring specify CP 6822 on handy form, pages 2 and 3.

### Remove corrosive fumes with alloy fans

Line of fans (centrifugal blower type), designed especially for corrosive service, have parts cast in Duriron, Durichlor, or Durimet 20. Capacity for largest in line of 5 sizes is 7500 cfm. Applications include removing fumes from laboratory hoods, Kjeldahl units, drying and absorption towers, pickling tanks, kettles and autoclaves, etc.

Complete descriptions, illustrations (including diagrams), specifications are given in 12-page bulletin. Coupled motor drives, belt drive units, hood outlet, other accessories are featured. How to specify, select, and order information is included. Bulletin 1103, issued by The Duriron Company, Inc., Dept. CP, Dayton 1, O. When inquiring specify CP 6823 on handy form, pages 2 and 3.

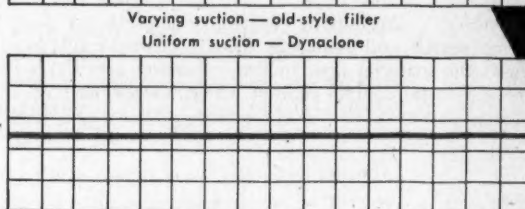
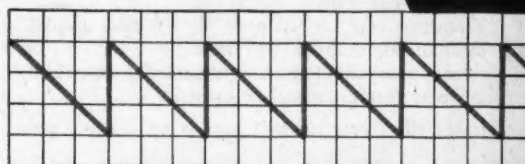
**NEW! NEW!**

## NEW Cloth Screen Dust Filter

**SLY**

**DYNACLONE**

**offers 5 NEW ADVANTAGES!**



1. Eliminates mechanical shaking.
2. Provides uniform suction at dust source.
3. Assures longer bag life . . . 4. minimum maintenance.
5. Keeps itself automatically and continuously clean without additional power or equipment.



Send for descriptive bulletin just out on the new SLY Dynaclone — the ultimate in filter performance.

\*Patent Applied for

This revolutionary new dust filter is another SLY first. Extremely simple and thoroughly dependable, it eliminates entirely the gremlin of mechanical shaking and provides uniform suction of air at dust source.

This uniform suction is achieved by a simple device which cleans the filter bags successively by a reverse flow of air—the same suction which draws the dust onto the filter cloth is reversed to blow it off.

Since this reverse air suction operates continually, the new SLY Filter requires no shutdowns for removing dust from the cloth.

No mechanical shaking or flexing device is needed, eliminating all strain and wear on the filter bags.

The simplicity of design and operation and elimination of all auxiliary equipment for periodic cleaning of bags mean a saving of floor space and a very minimum of maintenance.

The result of long experimentation and exhaustive tests, the SLY Dynaclone has thoroughly proved itself. It provides substantial savings over any other type of cloth screen dust collection. Write for complete information.

**SLY**

**PIONEERS and LEADERS in INDUSTRIAL DUST CONTROL**

**THE W. W. SLY MANUFACTURING CO.**

4754 Train Avenue

Cleveland 2, Ohio

NEW YORK • CHICAGO • ST. LOUIS • PHILADELPHIA  
DETROIT • MINNEAPOLIS • BIRMINGHAM • CINCINNATI  
LOS ANGELES • ROCHESTER • TORONTO

When inquiring check CP 6824 on handy form, pgs. 2-3

## Any Tramp Metal in Non-magnetic Materials Detected on Belt Conveyor

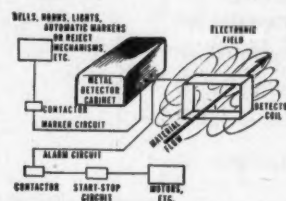
Sensitivity adjustable for large or small pieces;  
material speeds to 900 ft per min

**USES:** For detecting any kind of tramp metal in non-metallic materials conveyed by belts at speeds where magnetic separation would be impossible.

**Features:** Controls permit adjustment of sensitivity for detecting either large or small (or both) pieces of metal. Detector can be adapted to operate mechanical, audible, or visual signal devices; also adapted to automatically stop belt conveyors when foreign metal is present.

Unit operates effectively on belt speeds up to 900' per min.

**Description:** Equipment consists of 2 parts: 1) detector or search coil which is usually custom-built to surround the material flow in the inspection area; 2) a water-tight metal control cabinet which houses the elec-



Block diagram of electronic metal detector

tronic and control relays. Control cabinet can be located within reasonable distance from the search coil. Product to be inspected is conveyed by belt to the search coil where it enters an electro-magnetic field. Selection of signal or marking device depends upon application involved.

Minimum size of metal particle detectable is dependent upon size of the search coil, and the "product effect" of material being handled. Search coil and frame are adjustable in 2 dimensions for the particular conveying system.

Detector is stable in operation, requiring no balancing adjustments. Automatic; unaffected by normal vibration.

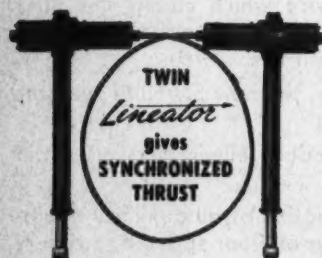
**Source:** Product of Eriez Manufacturing Co., Dept. CP, 1265 East 12th St., Erie, Pa. . . or for more information check CP 6826 on handy form, pages 2 and 3.



Electric

## LINEAR and ROTARY ACTUATORS

Responding to popular demand our electrically operated Lineator, Linear Actuators and Rotorac, Rotary Actuators have been modified for industrial applications to permit operation directly upon 110 volt, 60 cycle, single phase, A.C. These highly dependable products, originally developed for exacting aircraft requirements, are finding increasing acceptance for automotive and industrial installation where remote application of power is required.



Mechanically synchronized Twin Lineators or Rotoracs offer a simple solution to the difficult problem of maintaining equal motion at separated points.

**POSITIONING CONTROL** is available for automatic or manual regulation.

→ **WRITE TODAY FOR LATEST CATALOG**



**ACCESSORIES CORPORATION**  
25 MONTGOMERY ST. • HILLSIDE 5, NEW JERSEY  
6926 MELROSE AVE. • HOLLYWOOD 38, CALIFORNIA  
W. N. WRIGHT • DALLAS, TEXAS  
The Ontario HUGHES OWENS CO. LTD. • OTTAWA, CANADA

When inquiring check CP 6825 on handy form, pgs. 2-3

## Automatic Sampling for The Laboratory

Device puts liquid sampling on 24-hr basis; dispenser offered as accessory for automatic, time filling

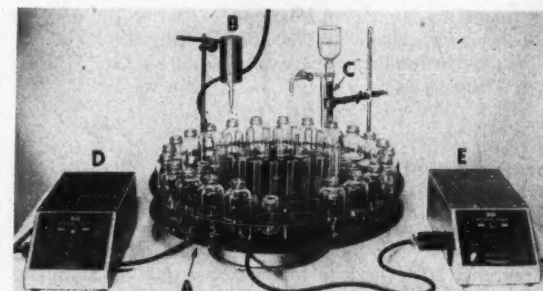
**USES:** Collection of fractional samples of flowing liquids, each sample being taken over preset interval of time and at predetermined times. Useful for collecting effluent from fractional distillation columns, ion exchange columns, etc., laboratory size.

Apparatus also can be equipped with a liquid dispenser for dispensing preset volumes of liquid to bottles or test tubes.

**Features:** Simplifies sampling, and puts it on a 24-hr automatic basis. Liquid dispenser is adaptable to automatic filling of containers with equal volumes of liquid.

**Description:** The automatic fraction collector (A) consists of a reel that is free to rotate on a motor-driven mechanism. Reel is made in several styles for holding containers varying in size from 15-ml test tubes to 4-oz bottles. The one shown carries those two sizes, plus a set of 1-oz bottles. There are 24 positions on its circumference.

Motor driving reel is controlled by interval timer (E). This timer starts and stops reel at preset intervals so that bottles pass one at a time through a position under a unit such as the ion exchange column (C). Each bottle stays



Reveals how fraction collector may be used. Key to the various items is given in story

under the column for a predetermined length of time, as set on timer.

Timer shown supplies an electrical impulse at intervals of 1, 5, 15, and 30 minutes, or 1, 2 or 4 hours. Thus, 24 fractions of equal volume (if flow from column is constant) may be collected over periods of 24 minutes to 96

CHEMICAL PROCESSING



hours. Any timer which will supply an impulse of 2 to 3 seconds duration at desired intervals may be used.

The liquid dispenser (B) is a magnetically controlled glass valve. Used with a suitable timer, it repeatedly delivers a selected volume from a storage bottle which supplies a constant liquid head. Timer illustrated (D) gives an impulse of duration from 1 to 100 seconds. With a 3' head, any volume from 0.5 to 50 ml can be delivered.

The Misco timer may be operated manually by a push-button on a control panel or by foot switch. Tubes or bottles are changed manually in these cases.

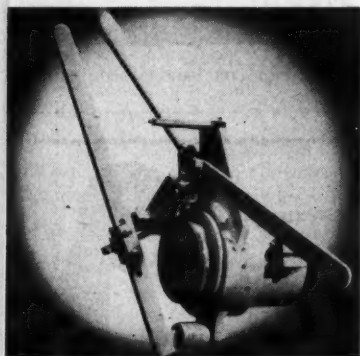
Metal parts of apparatus have blue hammertone finish. Built for 110-volt, 60 cycles AC.

Source: Made by Microchemical Specialties Co., Dept. CP, 1834 University Ave., Berkeley 3, Calif. . . or for more information check CP 6827 on handy form, pages 2 and 3.

#### **In-the-field preparation of rubber-lined pipe by maintenance crew . . .**

pipe tool eliminates need for special equipment to cut, face, groove and counterbore

Uses: Special tool for preparing flexible, hard rubber-lined pipe in the field, for use with manufacturer's pipe joint system. For cutting to length, facing, grooving and counterboring; and may be used with a pipe-threading machine, lathe, or any equipment that will rotate pipe.



Tool for rubber-lined pipe

installation of joints in the field by the user's own maintenance crew without sending parts to special fabricators for cutting, welding or lining the flange.

Description: Joints are leak-proof and require no sealing compounds. The tool itself has collets for 1-1/2, 2, 2-1/2, 3 and 4" pipe diameters.

Source: Gates Engineering Company, Dept. CP, P. O. Box 1711, Wilmington, Del. . . or for more information check CP 6828 on handy form, pages 2 and 3.

#### **Condensers, coolers, ejectors, pumps — 4 bulletins**

Four bulletins cover the following equipment: oil and water coolers ("Coolers — Type AL"); condensers (Bulletin 441-C); centrifugal and piston pumps (Catalog L); and air ejectors ("Steam Jet Air Ejectors"). Each is multi-colored; contains descriptions, illustrations, and specifications.

Issued by Condenser Service & Engineering Co., Inc., Dept. CP, Seaboard Trust Building, Hoboken, N. J. When inquiring specify CP 6829 on handy form, pages 2 and 3.

## **flanged head end assembly**

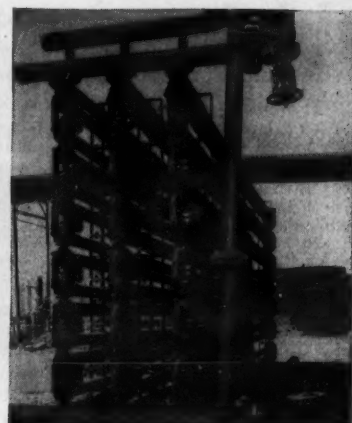
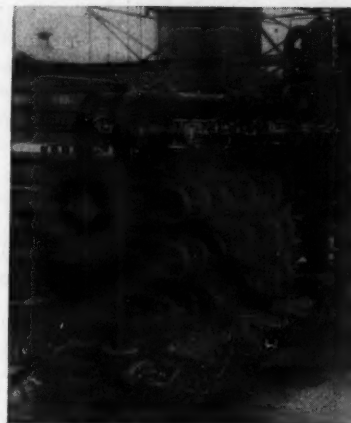
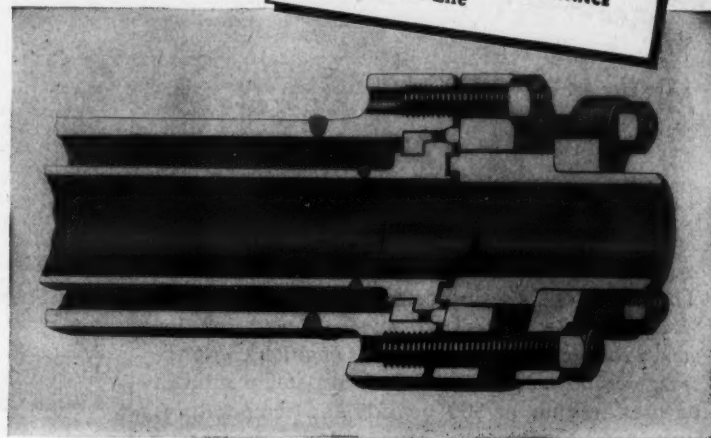
**Brown Fintube Head End Construction  
Eliminates Operating and Maintenance  
Troubles of Ground Joints and Screw Unions**

● Engineering, operating and maintenance men all enthusiastically endorse our flanged head end construction which avoids pack joints, glands, ground joint seals, screw unions, and all the operating and maintenance trouble resulting from ground joint and screw union construction.

The seating surfaces are in full view of the operator, and easily accessible. This permits them to be wiped clean of all dirt and grit before closing the seal — not possible when ground joints are used.

The metallic sealing ring used in Brown Fintube Exchangers is recognized by engineers everywhere as the ideal closure. It overcomes any slight unevenness of the seating surface and permits tight, leak-proof seals to be "made," and "broken" easily and quickly, without torsional stress or twisting — assuring trouble-free operation far surpassing that afforded by other types of closures.

For the utmost in efficiency and economy, use Brown's proven, welded fintube heat exchangers throughout your plant. Estimates and quotations furnished promptly. Write for Bulletin No. 481.



**THE BROWN FINTUBE CO.**  
ELYRIA, OHIO

**SECTIONAL  
HAIRPIN  
HEAT EXCHANGERS**

When inquiring check CP 6830 on handy form, pgs. 2-3



## QUESTION:

*Which Garlock rod packing is recommended for general use against steam pressures up to 300 lbs.?*

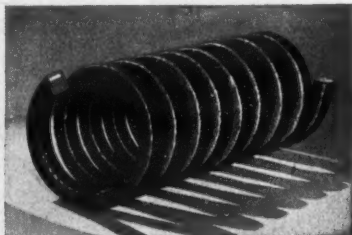
## ANSWER:

**Garlock 150**

Thousands of successful companies throughout the world have standardized on GARLOCK 150 for steam rods on equipment such as engines, compressors, pumps, etc.—in fact, for most steam services at pressures up to 300 pounds and temperatures up to 600° F.

You can depend on GARLOCK 150 for superior service because of its uniform, *quality controlled* construction. Start now to reduce maintenance and replacement costs on your rod packings—*standardize* on GARLOCK 150 for general steam service.

GARLOCK 150 spiral (illustrated) and GARLOCK 125 coil are made in 12½" lengths and in packing sizes from ¾" to 1½", advancing by sixteenths. Ring form — GARLOCK 200.



THE GARLOCK PACKING COMPANY  
PALMYRA, NEW YORK

In Canada: The Garlock Packing Company  
of Canada Ltd., Montreal, Que.

**GARLOCK**  
PACKINGS, GASKETS AND OIL SEALS

When inquiring check CP 6831 on handy form; pgs. 2-3

## PROCESSING EQUIPMENT

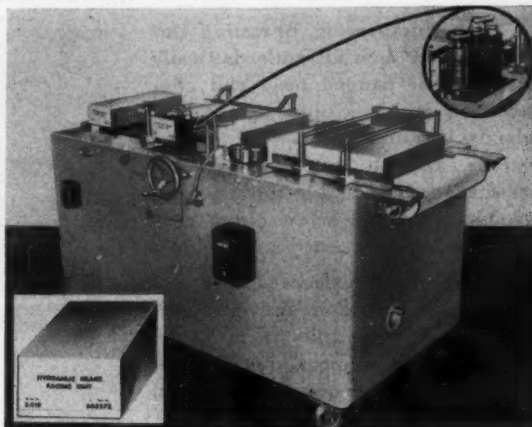
### Design package imprinter as integral part of packaging line . . .

speeds adjustable from 35 to 150 units/min; eliminates need for operator

**Uses:** Imprints code-dates and content descriptions on cartons, boxes, canisters, cans, jars, bottles, paper cups, etc. For permanent markings on glass, tin, cellophane, waxed paper, other difficult-to-mark surfaces.

Designed for synchronization with cartoners, carton sealers, wrapping machines, cappers, fillers, etc. Can be utilized with a packing table operation as an independent imprinting station.

**Features:** All models are adjustable to accommodate varying size ranges of similar package forms; available



Package imprinting machine

for marking bottom, top, or end of package, or any combination. Adjustable speeds 35-150 per min.

Imprint itself is reported to be of printing-press quality. Imprint legends range from 3/16 to 4" in size.

Operation requires no personnel; ink fountain normally requires re-filling once daily.

**Description:** The box and carton marking model of the "Markocoder" handles rectangular packages from ½ x 5/8 x 1-7/8" to 10 x 12 x 18" in size.

Imprint legends are made from special adhesive-backed dies or grooved-base type which can be readily changed. Unit is able to spot marks in identical locations or panels on packages when successively run through the machine. Complete details of the machine are given in manufacturer's Data Sheet No. 10.0.

**Source:** Manufactured by Adolph Gottscho, Inc., Dept. CP, 1 Hudson St., New York 13, N. Y. . . or for more information check CP 6832 on handy form, pages 2 and 3.

### Staple both sides of cartons from outside at same time, with automatic unit . . .

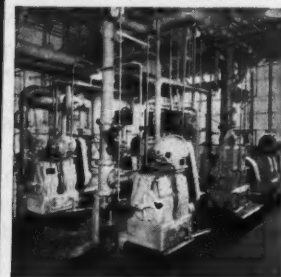
machine adjusts to handle filled-fiber, corrugated cartons of varying sizes; no operator needed

**Uses:** For automatically and simultaneously stapling two sides of telescope cartons of one or varying sizes.

**Features:** Retractable anvil principle allows any filled-fiber or corrugated carton to be stapled from the outside,

## GREATER EFFICIENCY

### in Vacuum Operations



**H**igh vacuum processing equipment operates at greatest efficiency when Stokes MICROVAC Pumps are used to provide the low pressures required.

Stokes MICROVAC Pumps combine

simplicity of design, highest continuous trouble-free service, and lowest operating costs.

F. J. STOKES MACHINE CO., 5080 TADOR ROAD, PHILADELPHIA 20, PA.



TODAY...Write for the NEW Catalog No. 700. It describes Stokes MICROVAC Pumps... gives schematic drawings of typical processing applications.

**F.J. STOKES MACHINE COMPANY**

When inquiring check CP 6833 on handy form, pgs. 2-3



**LINK-BELT "100"**

### BELT CONVEYOR IDLER

#### Offers Outstanding Service Features

- **CLEAN OPERATION**—Seal keeps grease in, dirt out
- **LESS BELT WEAR**—Rolls smooth to minimize belt wear
- **STRONG CONSTRUCTION**—Roller Bearings of high-grade steel. Nuts and Yokes interlocked to prevent brackets from spreading. End Brackets riveted to provide stability, transmit load directly to steel bar feet
- **EASY LUBRICATION**—Grease Fittings provide easy and safe lubrication, protected within end bracket

#### Complete Link-Belt Line Includes

Return Idlers — Rubber-Tread Return Idlers — Rubber-Tread Impact Troughing Idlers — Positive Action Self-Aligning Idlers

SEND FOR BOOK NO. 1915

**LINK-BELT COMPANY**

11,740

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8.

Offices, Factory Branch Stores and Distributors in Principal Cities.

When inquiring check CP 6834 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## PROCESSING EQUIPMENT

tops and bottoms (or both sides) simultaneously. This model is completely automatic. No operator is required when cartons of the same size are being stapled. Only occasional loading of staple magazine is necessary.

**Description:** Model B2H1 can close approximately 1000 cartons per hour. Cartons come off main conveyor line onto a power conveyor. The latter is part of the stapling machine. An overhead compression belt presses telescoping lid down tight and as cartons move between staple heads, two staples are automatically driven into either side of carton. Cartons move along and the stapling operation is repeated as needed.

Tomato cartons pictured require only one large staple in each side.

**Source:** Model B2H1 and other size staplers are available from International Staple & Machine Co., Dept. CP, Havertown, Pa. . . . or for more information check CP 6835 on handy form, pages 2 and 3.

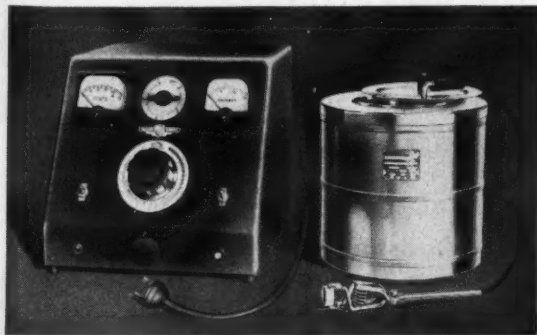
### Polish steels, alloys, copper for microscopic study . . .

electrolytic unit can be water-cooled; permits safe use of greater number of electrolytes

**Uses:** To polish metals for microscopic investigation. Polishes carbon steels, alloy steels including stainless, aluminum alloys, nickel alloys, copper, brass, etc.

**Features:** Electrolyte bath may be water-cooled to keep electrolytes below critical temps. This permits safe use of greater variety of electrolytes.

**Description:** Electrolyte bath is glass jar placed inside

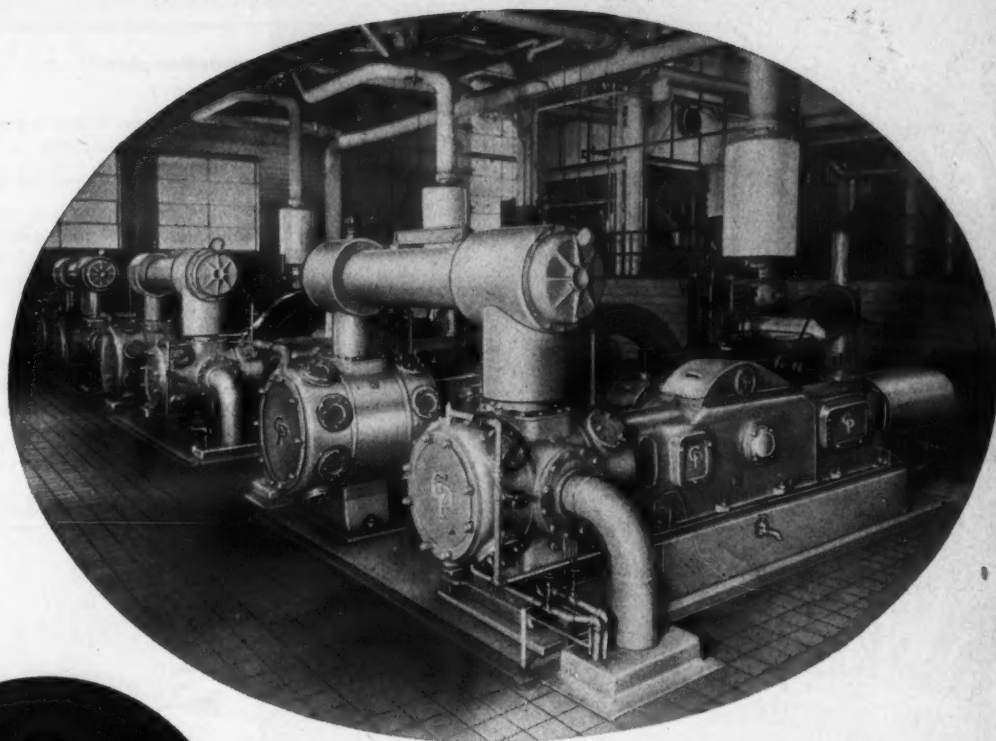


Electrolytic polisher handles most metals

stainless steel insulating jacket. Cooling water may be circulated between jacket and jar.

Rectifier unit converts 115-v, 60-cycle AC to DC. Voltmeter, ammeter, timer, pilot light, reversing switch, fuse, and polarized connection for cord to bath unit are all included in rectifier assembly.

**Source:** Precision Scientific Co., Dept. CP, 3737 W. Cortland St., Chicago 47, Ill. . . . or for more information check CP 6836 on handy form, pages 2 and 3.



**low  
cost  
air**

**where steam is available**

In plants with ample boiler capacity, compressed air requirements can be met effectively, at low cost, with the Chicago Pneumatic Type H Steam-Driven Compressor.

Of horizontal duplex design, its dependability and economy over a wide range of operating conditions are assured by such features as: (1) economical steam end proportioned to the plant's steam conditions; (2) automatic cut-off governor; (3) efficient air end, with Simplate valves.

Capacities of the Type H range from 900 to 7400 c.f.m., 100 to 125 pounds pressure. Other sizes of CP steam-driven compressors are available in single and multi-stage designs for lower and higher pressures.

Write for Bulletin 729.



**CHICAGO PNEUMATIC  
TOOL COMPANY**

General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES  
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

When inquiring check CP 6837 on handy form, pgs. 2-3



**NOT JUST STEAM  
NOT JUST DETERGENTS**

NO OTHER SYSTEM provides cleaning action comparable to the Sellers Hi-Pressure Jet Cleaner. 94% reductions in daily clean-up costs are commonplace with this remarkable, low cost equipment—used for cleaning both your plant and processing equipment. The Sellers Hi-Pressure Jet Cleaner simply washes away dirt, slime, grease and mold growths with its high pressure, high temperature hydraulic cleaning action. FOR COMPLETE INFORMATION, write for Bulletin C-2.

**SELLERS *Injector* CORPORATION**  
SINCE 1860  
1611 HAMILTON STREET PHILADELPHIA 30, PA.

When inquiring check CP 6838 on handy form, pgs. 2-3

Page 82

## PROCESSING EQUIPMENT

### Complete "steam-boiler plant" with gas-fired unit . . .

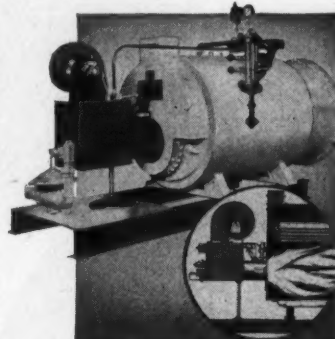
operation of horizontal-tube boiler is fully automatic; 9 sizes from 12 to 100 hp capacity

**Uses:** Complete gas combustion unit for general steam-generation.

**Features:** "Steam-boiler plant" in itself. Each unit is a complete boiler, shipped assembled and ready for use after connection of steam, water, and gas lines. Nine sizes range from 12 to 100 hp capacity; are built in accordance with ASME codes.

Has combustion regulator, flame failure protection, and push-button ignition. Design of flues permits maximum extraction of heat from gases of combustion.

**Description:** Unit is an automatic, gas-fired Scotch marine steam boiler. Series G units have capacities from 12 to and including 30 hp; Series B units from 30 to 100 hp. Shell of boiler is a horizontal steel cylinder; furnace area is another steel cylinder within this shell. Small and long tubes from an insulated chamber in rear of furnace area carry gases back entire length of boiler.



Gas-fired, horizontal-tube boiler showing combustion unit

In series G, firing is done with a gas combustion unit which contains steam, gas, and safety controls; in Series B, firing is accomplished by means of a pre-mixing burner. Both series have flame failure protection.

All heating surfaces are below water line to prevent "burning" tubes. Space is provided within boiler to catch and dispose of impurities inherent in boiler feed water.

Additional information on these boilers is contained in Bulletin A-104.

**Source:** Product of the Eclipse Fuel Engineering Co., Dept. CP, 719 S. Main St., Rockford, Ill. . . . or for more information check CP 6839 on handy form, pages 2 and 3.

### 2-1/2 years' service does not change pressure setting of safety relief valves . . .

nitrile rubber valve seat does not stick to valve, even in contact with liquefied petroleum gases

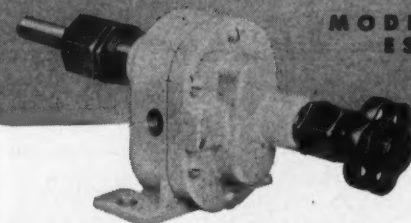
**Uses:** To provide safety relief for systems handling liquefied petroleum gases, other fluids which require relief valves.

**Features:** Nitrile rubber valve seat does not stick to metal, does not fail from contact with petroleum compounds. Pressure settings remain substantially constant for prolonged periods. Field tests have shown no appreciable change in setting after 2-1/2 years' service.

**Description:** In the past, rubber-base compounds used for the valve seat would stick to valve, sometimes actually vulcanizing under the pressure and contact with the

## ERTEL STAINLESS STEEL SELF-PRIMING PUMP

For pumping corrosive liquids, chemicals, drugs, cosmetics, foods, syrups, wines, whiskeys, pharmaceuticals, vinegar, etc.



MODEL ESP

★ Capacities 3, 5, 10, 20 and 30 gpm. Perfect alignment of the minimum of moving parts. Has manual by-pass control valve to easily regu-

late pressure and flow rate. Available as illustrated or as complete assembly direct drive or belt driven. Please ask for Pump Bulletin #34.

**ERTEL SERVICE:** Send sample of your product for laboratory test. We will filter and return with enough recognized Ertel Asbestos Filter Sheets to prove the superior results in your plant.

**ERTEL ENGINEERING CORPORATION**  
KINGSTON NEW YORK

Representatives in Principal Cities  
MANUFACTURERS OF HIGH GRADE ERTEL ASBESTOS FILTER SHEETS  
ASBESTOS SHEET FILTERS • CYLINDER TYPE DISC FILTERS  
PYROGEN FILTERS • VACUUM BOTTLE FILLERS • MIXERS • CAPERS  
CENTRIFUGAL AND SELF-PRIMING STAINLESS STEEL PUMPS

When inquiring check CP 6840 on handy form, pgs. 2-3

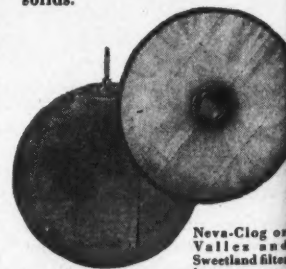
## For Permanence and Lower Cost Operation

**NEVA-CLOG FILTER MEDIUM**

**EASY TO APPLY  
RIGID • DURABLE  
NON-PLUGGING  
More Resistant to  
Corrosion, Erosion  
Heat and Pressure**

Outlasts woven metal screens, withstands scraping and chafing. Made in flat plates, discs, cylinders, etc., for any type filter or for ion exchange, percolation, extraction, absorption or separation equipment. Samples on request.

Neva-Clog magnified shows how 2 stainless steel sheets are arranged to provide high flow rates and full retention of solids.



Neva-Clog on Valves and Sweetland filter leaves.

W. S. ROCKWELL CO. • 220 Eliot St., Fairfield, Conn.

When inquiring check CP 6841 on handy form, pgs. 2-3

CHEMICAL PROCESSING



# LARGE



...or small

## YOU GET POSITIVE CORROSION RESISTANCE ON ALL

Tanks 10 ft. in diameter, 12 ft. deep—or pipe fittings no larger than your thumb. Every piece of process equipment in your plant can be made *positively* corrosion resistant for longer service life, lower maintenance costs. HAVEG, the strong, lightweight molded material, resists chemical action *through its entire mass*. Not just a lining or coating, its performance is not affected by surface gouges or abrasion.

We're sure HAVEG can help you increase equipment life—so sure that we ask you to try it. Send for samples or install a test piece. Meanwhile, for detailed engineering and application data, write for Bulletin F-5, today.

Available in complete range of sizes to meet all process equipment needs!



**HAVEG**  
CORPORATION  
NEWARK 7, DELAWARE



When inquiring check CP 6842 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

petroleum gases. This sticking caused excessively high relief pressures.

Specially designed nitrile rubber compound is produced from Hycar rubber by the Acushnet Process Company, New Bedford, Mass. This compound is used in safety relief valves on ICC cylinders up to 150 lbs. propane capacity. Same material is used for approved spring type safety relief valves on greater capacity ASME tanks.

Pressure settings now provided with these safety relief valves range from 100 to 400 psi. Other settings can be obtained. Flow capacities range from 2000 cfm for 3/4" pipe size to 7300 cfm for 1-1/2" pipe size (rated at 300 psi flowing pressure).

Pressure settings are sealed at plus or minus 5 psi; pressure required to fully open valves is within 5% of setting pressure. Valve efficiency based on a nozzle with 0.96 discharge coefficient is 100%.

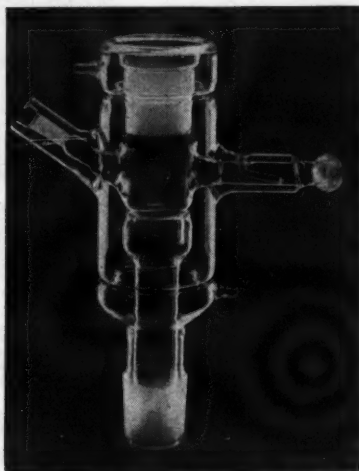
**Source:** Safety relief valves are produced by the Weatherhead Company, 300 E. 131st St., Cleveland 8, Ohio... or for more information check CP 6843 on handy form, pages 2 and 3.

## Feed section for fractionating column permits measuring temp. of vapor, feed...

sections fit 1, 2, 3 and 4" columns; two largest sizes are without vacuum jackets

**Uses:** To permit the insertion of a continuous feed at an intermediate point in laboratory fractionating columns of a wide variety of types.

**Features:** Redesigned for additional temperature-measuring facilities. A well is included to accommodate a 3" immersion thermometer or thermocouple directly in the raising vapor stream, while a second thermocouple well, located in input-connector projection, is positioned for intimate contact with the fluid, even at minimum rates of flow.



1" feed section with vacuum jacket unsilvered to show interior

**Description:** Feed sections for 1 and 2" columns are thermally insulated by a jacket containing high vacuum pumped at high temperature, while an observation window in the jacket silvering permits measurement of liquid-return.

Temperature-compensating bellows permit operation

up to 500°F. Internal-convolution design minimizes possibilities of mechanical damage. Top and bottom connections can be furnished either with spherical or standard-taper glass joints, to match corresponding column sections. Feed sections are varying sizes to fit 1, 2, 3 and 4" columns. The two larger sizes are without vacuum jackets.

**Source:** Glass Engineering Laboratories, Dept. CP, 525 O'Neill Ave., Belmont, Calif. . . or for more information check CP 6844 on handy form, pages 2 and 3.

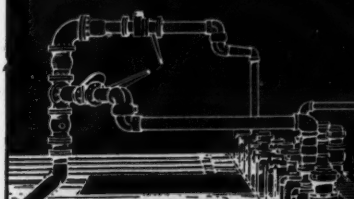


For greater safety and longer life use CHIKSAN Ball-Bearing Swivel Joints in loading and unloading lines handling most types of chemical compounds.

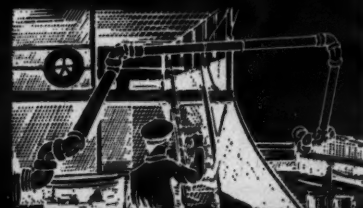
It's safer...and less expensive...to insure safety *all the way* in your loading and unloading lines. With CHIKSAN Ball-Bearing Swivel Joints, you get the same strength...the same safety...the same protection throughout your entire piping system because you can build your own flexible loading and unloading lines with pipe and fittings of the same strength and long life

as you design and build into all other parts of your piping system. You eliminate all weak links! You eliminate all the variable hazards which increase with age and usage in all types of fabric or flexible metal hose. Play safe *all the way*. Use CHIKSAN Ball-Bearing Swivel Joints to make up your loading and unloading lines. With them, you get unlimited flexibility with the strength, long life and safety of steel. You get greater protection...greater safety...and greater economy with CHIKSAN.

CHIKSAN's Engineering Department will gladly assist you in designing flexible lines to suit your individual needs. This service is based on 25 years of experience in designing and developing Ball-Bearing Swivel Joints for every purpose.



Transfer lines using CHIKSAN Ball-Bearing Swivel Joints. These joints are of extra capacity and strength...eliminate all maintenance losses.



CHIKSAN All-Metal Manifold and Range Manifold...to handle...safely...and more economical.

REPRESENTATIVES IN PRINCIPAL CITIES

**CHIKSAN COMPANY**  
AND SUBSIDIARY COMPANIES  
Chicago 3 · BREA, CALIFORNIA · New York 7  
WELL EQUIPMENT MFG. CORP. HOUSTON 1, TEXAS  
CHIKSAN EXPORT CO. BREA, CALIFORNIA · NEW YORK 7

## BALL-BEARING SWIVEL JOINTS FOR ALL PURPOSES

When inquiring check CP 6845 on handy form, pgs. 2-3



## DO YOU KNOW..

*That it's possible*

TO GO THROUGH A HEATING SEASON

WITHOUT UNIT HEATER MAINTENANCE EXPENSE not only one heating season but many, providing that yours is a GRID installation? It's possible, and is being done by major chemical plants who have investigated and installed GRID equipment. It's possible because:

**GRID** cast iron construction withstands corrosive fumes.

**GRID** wide fin spacing facilitates easy cleaning.

**GRID** will withstand steam pressures up to 250 lbs., and is free of electrolysis.

**GRID** fins are cast integral with the steam chamber assuring even distribution of heat. It's not possible for GRID fins to come loose from the steam chamber to cause loss of heating efficiency.

**GRID** design incorporating proper fan sizes, motor speeds and outlet temperatures results in a properly balanced heating unit, especially when high steam pressures are used.

No other unit heater incorporates these features that are vital to proper and efficient chemical plant heating.

INVESTIGATE today GRID systems of high pressure unit heaters, blast coils, and radiation . . . the answer to maintenance-free heating in the chemical industry.

**D. J. MURRAY MANUFACTURING CO.**  
WAUSAU WISCONSIN

When inquiring check CP 6846 on handy form, pgs. 2-3

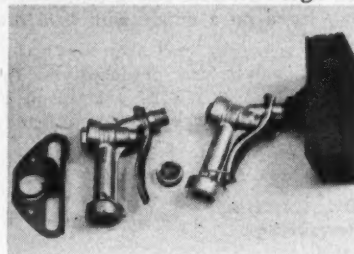
## PROCESSING EQUIPMENT

**Wash, rinse continuously with rubber pad-nozzle hose attachment . . .**

speeds thorough cleaning of trays, benches and trucks

**Uses:** Simplifies washing of trucks, trays, benches, racks and equipment.

**Features:** Automatic shut-off on trigger-type valve permits intermittent action, conserves water and provides maximum convenience for user. Nozzle has high velocity reversible cap. This solid brass cap converges 37 separate streams into one solid high velocity



Wash-pad mounts on nozzle

locity jet that is effective in driving dirt and dislodging stubborn debris.

By reversing cap a variable spray is obtained for gentle rinsing action.

**Description:** Sponge rubber pad attaches easily to pistol-grip style of water nozzle. This combination provides a continuous rinsing action. Water flowing from nozzle penetrates evenly throughout the 5 x 3-3/16 x 1 1/2" sponge rubber wash-pad.

Rubber washers are easily replaced without special tools. Nozzle fits any standard garden hose.

**Source:** Rubber pads and nozzles are available from Molded Specialties, Inc., Dept. CP, 1333 East 170th St., Cleveland, Ohio . . . or for more information check CP 6848 on handy form, pages 2 and 3.

**Control plate heat to within 2° from 200° to 700° F . . .**

plate is 6 x 6"; thermostat gives variable control

**Uses:** Adaptable to many critical uses, as well as general heating. Sensitivity of control makes this plate serviceable in many special applications. Capacity for supporting many times its weight also contributes to its utility.

**Features:** Temperature variation is held to within 5° at 100°F and within 2° from 200°F to maximum. This sensitivity of control is unusual, particularly in the lower temperature

## BETTER LIGHTING for STEAMY, DUSTY locations

*New Improved*

**Benjamin "VAPOR-TITE 40" Fluorescent Lighting Units**

Three important advancements in these new, improved units enable you to obtain the following benefits:

### SIMPLIFIED MAINTENANCE

**New Spring-Type Clamps!** You need unscrew only three of these new, hand-operated clamps to open the cover. When cover is closed, clamps hold it securely in place to keep out steam, dust, dirt.

**Heat, Impact-Resisting Glass Cover,** not affected by temperature extremes, cracks only under intense mechanical strains. Exclusive "Springlox" Lampholders cut relamping time to a few seconds!

### INCREASED SAFETY

Lamps are held in position by new "Springlox" Lampholders, exclusive with Benjamin. They provide positive assurance that lamps will not vibrate loose.

Approved "Vapor-Tight" by U. L.

### GREATER EFFICIENCY

High Light Output! Genuine Porcelain Enamel reflector has reflection factor exceeding 82%. Efficiency for twin-lamp units is 67% or more of lamp-output.

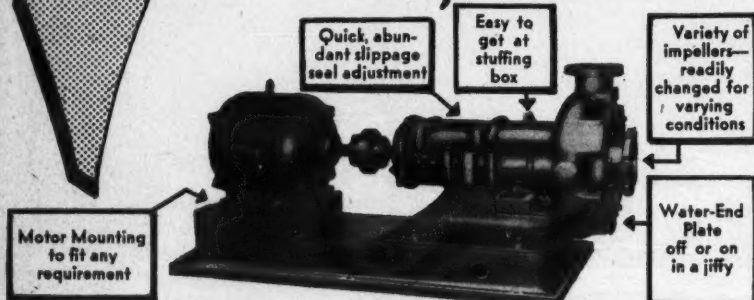
Available in arrangements for two or three 48-inch, 40-watt fluorescent lamps.

**FREE DATA**—Complete "Vapor-Tite 40" specifications and lighting data, sent upon request. Write Benjamin Electric Mfg. Co., Dept. LL, Des Plaines, Ill.

**BENJAMIN "Vapor-Tite 40" FLUORESCENT LIGHTING UNITS**  
Sold Only Through Electrical Distributors

When inquiring check CP 6849 on handy form, pgs. 2-3

## Check these NAGLE PUMP Design Features!



- ★ Easy to dismantle and reassemble (if corroded remove bolts with acetylene torch.)
- ★ Repairs made on the spot.
- ★ Plenty of room for packing.
- ★ Assemble from either side, or from above.
- ★ Does not have to be level—even hang it on wall or ceiling.

NEW Catalog 4906 gives other features!

**Nagle Pumps**

INDUSTRIAL PUMPS FOR ABUSIVE APPLICATION

1247 Center Ave., Chicago Heights, Ill.

When inquiring check CP 6847 on handy form, pgs. 2-3

*Do You Know*

## H & K SPECIALIZES IN CHEMICAL PROCESS SCREENS?

- Any Pattern — Shape or Sheet Material
- No Order Too Large or Too Small

H & K has made a science of meeting the exacting specifications of the chemical industry for screens used under heat, corrosive, acid, alkali and other similar applications. H & K screens are available with tolerances as close as  $\pm .0005"$ . Stainless steel is a specialty. Choice of patterns is practically unlimited. Accuracy of hole size and spacing, flatness and proper selection of materials are conscientiously controlled. Rough edges and burrs are held to a very minimum, assuring clean, efficient screens.

**Harrington & King PERFORATING CO.**

5636 Fillmore St., Chicago 44, Ill.  
114 Liberty St., New York 6, N. Y.

When inquiring check CP 6850 on handy form, pgs. 2-3

CHEMICAL PROCESSING

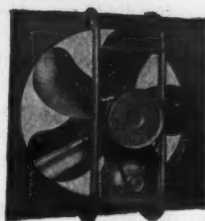


**-MOST COMPLETE LINE FOR '50!**

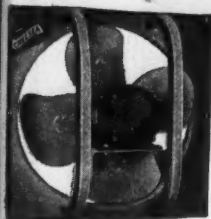
# CHELSEA FANS

— for every industrial and commercial requirement!

Specifying Chelsea Fans for every installation is one sure way to proper ventilation. There's a Chelsea model for every requirement — and each type is certified as to performance in accordance with the Standard Code of the Propeller Fan Manufacturers Association.



**Chelsea All-Purpose Fan Type BB** — For removing smoke, steam, heat, fumes, etc. Heavy duty, direct drive fan for continuous operation. Recommended for use against static pressure and in duct work. One piece panel and orifice, lightweight, simple to install. Sizes from 10" to 30".



**Chelsea Industrial Fan Type IND** — For large general area ventilation. Moves large volumes of air under pressure. "V" belt drive; Sizes from 24" to 60".



## SEND FOR YOUR FREE KIT!

Contains all the information you need to make ventilating and cooling installations in factory, plant, office or shop — selection of proper fan, installation hints, etc. No obligation. Write Department D.



**CHELSEA FAN & BLOWER CO., INC.**  
1206 GROVE ST. IRVINGTON, N. J.



When inquiring check CP 6851 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

ranges. Control dial is numbered to indicate approximate temperature settings. Neon indicating light glows while plate is heating. Weight of entire unit is only 41½ lbs.

**Description:** Cast aluminum surface plate is 6 x 6". Square shape gives greater usable surface area. It is well insulated on bottom side and is



Plate heats to 700° F

mounted within the metal body, with only four small points of contact to minimize heat conduction to body. Heating elements are made of nickel-chromium alloy. Thermostat gives variable control from 100° to 700° F.

Dovetail sockets are permanently attached to facilitate making apparatus set-ups, both for suspension of the plate beneath the apparatus and for supporting apparatus on the plate.

**Source:** Thermo Electric Mfg. Co., Dept. CP, 476 W. Locust St., Dubuque, Iowa . . . or for more information check CP 6853 on handy form, pages 2 and 3.

## Control polyphase motors from 1 to 100 hp with magnetic starter . . .

door can be locked with 1, 2, 3 or 4 padlocks

**Uses:** To control polyphase motors from 1 to 100 hp.

**Features:** Circuit breaker turns off power when door is opened, thus providing maximum safety. Authorized persons can trip interlock to inspect interior when power is on. Door can be locked with 1, 2, 3 or 4 padlocks.

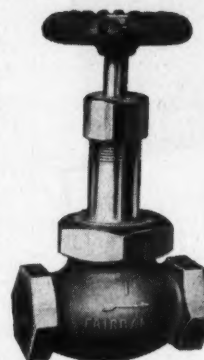
**Description:** Thermal magnetic circuit breaker is non-tamperable, gives repeat protection, can be easily reset. Magnetic starter is simple. Straight-line, guided motion of armature and movable contact assembly eliminates bearing, reduces wear. Mounting and wiring conform to new NEMA standards, add flexibility.

**Source:** More detailed information is carried in maker's Bulletin 8539, issued by Square D Company, Industrial Controller Div., Dept. CP, 4041 No. Richards St., Milwaukee 12, Wis. . . . or for more information check CP 6854 on handy form, pages 2 & 3.

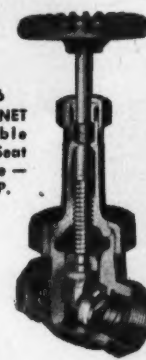
If you pipe it...there's a  
**Fairbanks valve**  
to control it



Here are two typical examples of the outstanding design, sound engineering and rugged construction that are built into every Fairbanks Valve. Years of experience in meeting all kinds of valve requirements for industry, have given Fairbanks Engineers a storehouse of knowledge in controlling the flow of water, steam, gas, oil, chemicals, etc. Consult them without obligation.



**Fig. 0236**  
**UNION BONNET**  
— Renewable  
Nickel Alloy Seat  
Gate Valve —  
200 lb. S.W.P.



**Fig. U-01**  
Renewable Composition Disc  
Globe Valve — 150 lb. S.W.P.



**To select the proper drive for any type of service**

**GET** your copies of the latest Cleveland catalogs for full information on all types and sizes of worm gear speed reducers — including rating tables, dimensional diagrams and data for both standard and fan-cooled units. Ask for Catalog 200 for standard drives and Catalog 300 for Speed-sure (fan-cooled). The Cleveland Worm & Gear Co., 3257 E. 80th St., Cleveland 4, O.

**CLEVELAND**  
Worm Gear  
Speed Reducers

For personalized service: Write or phone John E. Muliken Cleveland exch. VUican 3-4560

When inquiring check CP 6852 on handy form, pgs. 2-3

**THE Fairbanks COMPANY**  
General Offices:  
393 LAFAYETTE STREET, NEW YORK 3, N. Y.

Branch Offices:  
393 Lafayette St., N. Y. 3, N. Y. 520 Atlantic Ave., Boston 10, Mass.  
15 Ferry St., Pittsburgh 22, Pa. 202 Division St., Rome, Ga.

**VALVES**  
**DART & PIC UNIONS • TRUCKS • CASTERS**

When inquiring check CP 6855 on handy form, pgs. 2-3

YOU GET  
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FACTS  
IN  
THESE



BOOKLETS

**Petrolite Crown Waxes** are low penetration, high melting point microcrystalline waxes. Their physical characteristics make them suitable for applications in many fields. The technical data in these booklets may enable you to lower production costs, improve your product, or both. A request for these booklets involves no obligation, why not fill out the coupon, send it in today?

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WAXES

**Petrolite Corporation, Ltd. • WAX DIVISION**  
30 Broad Street, New York 4, New York

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STREET: \_\_\_\_\_

CITY: \_\_\_\_\_ ZONE: \_\_\_\_\_ STATE: \_\_\_\_\_

PW-50-A

When inquiring check CP 6856 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**Delivers lubricant to machines  
too remote or scattered for  
centralized pumping . . .**

portable bucket pump holds 30 lbs of lubricant; nipple of 5' hose slips into special coupler

**Uses:** Portable, high-pressure lubricant pump for delivering lubricant to circuits of manufacturer's Centro-Matic lubricant injectors installed on one or more machines not equipped with pump, or where machines are not grouped, making impractical the employment of a centralized pumping unit.

**Features:** Includes Flex-O-Matic coupler with adapter for assembly to manifold inlet of the most easily accessible bank of injectors on the machine.

**Description:** Bucket pump Model 1808. Lubricant capacity, 30 lbs. Accessory to maker's line of centralized single-line lubrication systems.

Pump includes 5' hose assembly terminating in a coupler nipple. Contact between pump and injectors is made by slipping coupler nipple into Flex-O-Matic coupler. Operator pumps lubricant into system until indicator stems on all injectors signal that lubricant has been discharged to all bearings. An incorporated pressure gauge indicates normal predetermined operating pressure. After lubricant is discharged to all bearings, operator raises pump handle to topmost position, automatically relieving line-pressure in system, permitting injectors to reload. A check, incorporated in Flex-O-Matic coupler, holds lubricant in system when hose-nipple is disengaged. Pump is 23" high.

**Source:** Lincoln Engineering Company, Dept. CP, 5780 Natural Bridge Ave., St. Louis 20, Mo. . . or for more information check CP 6857 on handy form, pages 2 and 3.

**Recommend stainless steel  
pressure sample cylinders  
for abnormal temps . . .**

conform to ICC specifications; for pressures to 1800 lbs, capacities to 1 gal

**Uses:** Containers for collecting pressurized samples. Recommended for pressure sampling operations under certain abnormal temperature conditions — at the temperature of a liquified nitrogen bath, for example.

**Features:** Two types; low pressure cylinders for 400 lb service, and high pressure cylinders for 1800 lb service. Fabricated from 18-8 type 304 stainless steel. Conform to ICC specs.; used for transporting samples safely.



Line of pressure sample containers is also available with single outlet

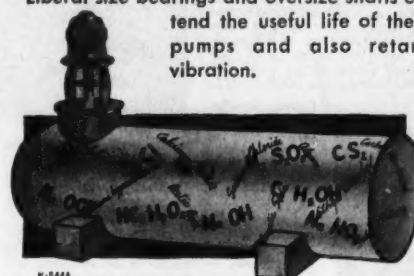
**Description:** Low pressure sample containers are available in 10 sizes with capacities ranging from 10 ml to 1 gal; these are 1/8 to 1/2" NPT female threaded. High pressure containers may be had in 7 sizes from 150 ml to 1 gal; these are 3/8 to 1/2" NPT female threaded. All sizes and



Bucket pump

## More Operating Hours!

By locating the stuffing box away from fluid being handled, repacking interruptions are reduced to an inconsiderable minimum...thus more operating hours with Taber Vertical Pumps. Liberal size bearings and oversize shafts extend the useful life of these pumps and also retard vibration.



Oleum, concentrated sulphuric, mixed acids and similar liquids, are well within the handling range of Taber Vertical Pumps. Pump can be furnished in all grades of nickel chrome alloys, iron, bronze or carbon steel... whichever customer has found most suitable for their requirements.

For complete information, please write on your letterhead for

**TABER SPECIAL BULLETIN V-837**

TABER PUMP CO. • Est. 1859 • 320 ELM ST., BUFFALO 3, N. Y.

**TABER** Higher Practical Performance **PUMPS**

When inquiring check CP 6858 on handy form, pgs. 2-3

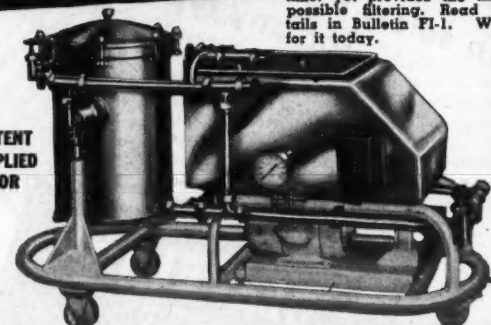
## GROEN VERTICAL FILTER

offers **new FILTERING EFFICIENCY**

NO CLOTH BAGS • NO SHEETS • NO PAPER PADS  
SELF-PROLONGING FILTRATION CYCLE • COMPLETE PRODUCT RECOVERY  
THOROUGH AUTOMATIC CLEANING

Modern, faster, much more economical filtering of liquids... with the rigidly proven GROEN Stainless Steel Sanitary VERTICAL TUBE FILTER... a new member of the widely used GROEN Line of Industrial Processing Units. Shown is Model LSP40, available portable or stationary. Effects COMPLETE PRODUCT RECOVERY. Greatly prolongs filtering cycle. Exclusive backwashing method eliminates disassembly. THOROUGH CLEANING a matter of mere minutes. No hoisting or scraping. Saves BIG on labor and time, yet provides the finest possible filtering. Read details in Bulletin FI-1. Write for it today.

PATENT  
APPLIED  
FOR



Branches: 30 Church St., New York 7; 420 Market St., San Francisco 11.

**GROEN MFG. CO.** (NINE A CENTURY OF EFFICIENCY)  
4531 West Armitage Avenue Chicago 39 ILLINOIS

When inquiring check CP 6859 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## PROCESSING EQUIPMENT

both types are either single or double outlet. Cylinders can be formed from other ferrous or non-ferrous materials on special order; can be designed to meet special capacities and working pressures.

Needle or diaphragm packless valves can be supplied with cylinders. Diaphragm types are forged brass; needle types are either forged brass or stainless steel.

Additional information on these cylinders is available in manufacturer's bulletin, "Stainless Steel Cylinders".

Source: Hoke Incorporated, Dept. CP, South Dean St. and Garrett Pl., Englewood, N. J. is the manufacturer. For more information check CP 6860 on handy form, pages 2 and 3.

### Stepless control, full output from 290 to 2300 rpm with all-electric drive . . .

$\frac{3}{4}$ , 1, 1- $\frac{1}{2}$  and 2 hp units have jogging controls, can be run as low as 80 rpm

Uses: All-electric speed control is being used on paper winders, slitters, folders, bag machines, packaging machinery, mixers, conveyors, variable-flow pumps and centrifuges, machine tools, batching units, etc.

Features: Units give rated output at speeds from 290 to 2300 rpm. Can be used as low as 80 rpm for short periods or light load. Jogging operation is included. Control station may be located anywhere.

Description: All-electric drive consists of motor, control station and control unit. Units are produced in ratings of  $\frac{3}{4}$ , 1, 1- $\frac{1}{2}$  and 2 hp.

Motors are ball-bearing type, with drip-proof, enclosed, fan-cooled or explosion-proof enclosures.

Conventional (NEMA 1) enclosure is provided for control station. Start, stop, and jog buttons, as well as speed adjustment dial, are included in 7-7/16 x 2-13/16 x 3-1/8" housing.

Control unit is housed in drip-protected cabinet, 30 1/2" high, 12" wide, 10-5/8" deep. Weighs less than 75 lbs. Electronic control circuits govern motor speed by controlling rectifier current from 4 gas-filled tubes. This rectified current is supplied to drive motor armature.



Electric variable voltage-type adjustable-speed motor drive

Dynamic braking and reversing control may be obtained if desired. Further information is carried in maker's bulletin D-2101.

Source: Reliance Electric & Engineering Co., Dept. CP, 1111 Ivanhoe Rd., Cleveland 10, O. . . or for more information check CP 6861 on handy form, pages 2 and 3.

## ACE HARD RUBBER and PLASTICS

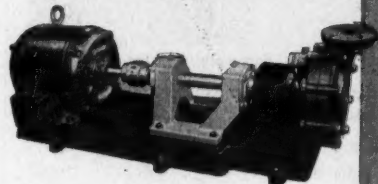
# STOP CORROSION AT ALL VITAL SPOTS

For instance . . . ACE PUMPS for Every Need!

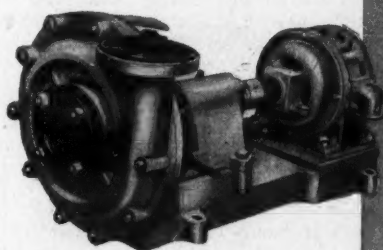
Ace hard rubber resists all alkalis, metallic salts of inorganic acids, hydrochloric acid any strength, nitric acid up to 16° Baume, phosphoric acid to 75%, sulphuric acid up to 50° Baume, most other inorganic acids any strength, and countless other corrosive solutions and fumes. Other Ace plastics such as Saran and Parian (polyethylene) extend this range of applications still further. Catalog 300-7 and Ace plastics bulletins tell you where Ace-clad and Ace molded equipment saves for you—send for them today.



Hard Rubber Centrifugal Pump Type WAM, Motor Driven. Up to 80 gpm. capacity.



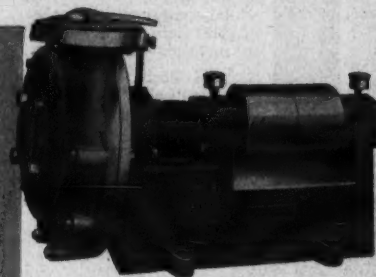
Hard Rubber Centrifugal Pump Type WAM, Motor Driven, Extended Base. Up to 80 gpm.



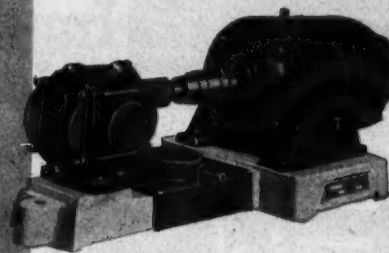
Hard Rubber Lined Centrifugal Pump Type WEFM, Motor Driven. Capacity to 350 gpm.



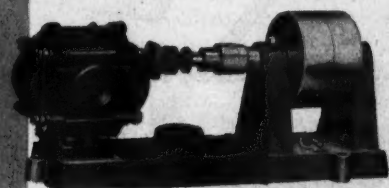
Complete view of Ace pump shows complete protection with Ace acid-resisting rubber.



Hard Rubber Lined Centrifugal Pump Type WEFB, Belt Driven.



Ace Hard Rubber Rotary Gear Pump, Motor Driven. Capacity 7 gpm.



Ace Hard Rubber Rotary Gear Pump, Belt Driven. Capacity 7 gpm.

SINCE 1851

## AMERICAN HARD RUBBER COMPANY

11 MERCER STREET • NEW YORK 13, N. Y.

When inquiring check CP 6862 on handy form, pgs. 2-3

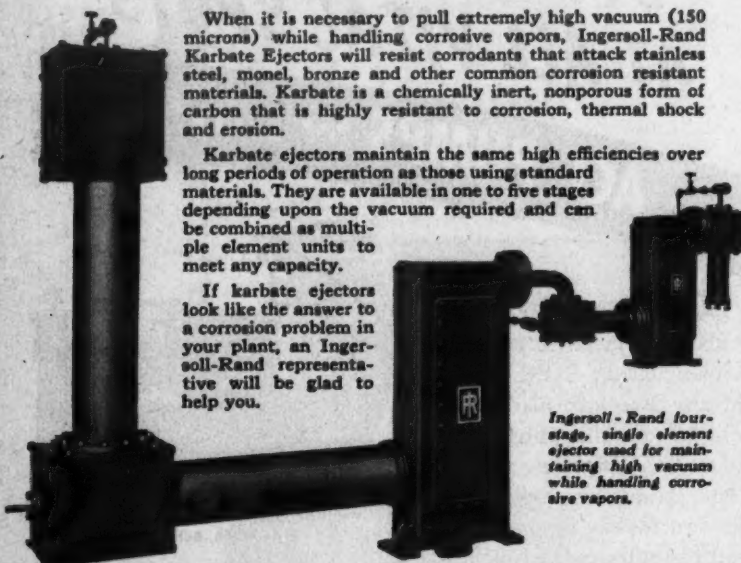
# HANDLING CORROSIVE VAPORS at 150 Microns

When it is necessary to pull extremely high vacuum (150 microns) while handling corrosive vapors, Ingersoll-Rand Karbate Ejectors will resist corrodants that attack stainless steel, monel, bronze and other common corrosion resistant materials. Karbate is a chemically inert, nonporous form of carbon that is highly resistant to corrosion, thermal shock and erosion.

Karbate ejectors maintain the same high efficiencies over long periods of operation as those using standard materials. They are available in one to five stages depending upon the vacuum required and can be combined as multiple element units to meet any capacity.

If karbate ejectors look like the answer to a corrosion problem in your plant, an Ingersoll-Rand representative will be glad to help you.

Ingersoll-Rand four-stage, single element ejector used for maintaining high vacuum while handling corrosive vapors.



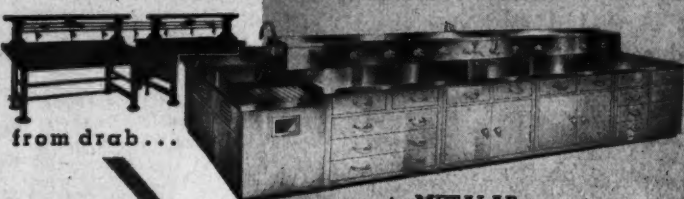
COMPRESSORS • AIR TOOLS • ROCK DRILLS  
TURBO BLOWERS • CONDENSERS  
CENTRIFUGAL PUMPS • OIL AND GAS ENGINE

## Ingersoll-Rand

11 Broadway, New York 4, N. Y. 2424

When inquiring check CP 6863 on handy form, pgs. 2-3

## THIS MAGNIFICENT TRANSITION—



from drab...

... to METALAB

--points the way to



Send for this new Complete Catalog on Laboratory Furniture and Equipment.

**GREATER PRESTIGE:** Install "METALAB", and immediately your time-worn laboratory springs to life! Or, if you are installing a new lab, it will be outstanding with "METALAB". Beautified with "METALAB", your lab becomes a joy to behold... an impressive exhibit for visitors... an inspiration for your personnel.

**INCREASED EFFICIENCY:** Endowed with the ultimate in functional design, engineered for maximum utility, "METALAB" equipment reduces waste motion... increases speed and quality of work.

**GREATER ECONOMY:** "METALAB" equipment looks "custom-built" — but actually it is mass-produced in Sectional Units in a large modern plant. The machinery, tools, and dies of our own exclusive design are engineered to produce superior standardized installations within your budget.

SECTIONAL LABORATORY FURNITURE  
and EQUIPMENT by

# METALAB

Equipment Corp.

1535 Dean St., Brooklyn 13, N. Y.

When inquiring check CP 6864 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

Weak battery cells  
located instantly,  
accurately...

adjustable prods fit terminals of  
any 6-volt battery

Uses: Cell tester for instantly  
locating defective battery cells in any  
6-volt battery.

Features: Double-scale meter is  
calibrated accurately from plus to  
minus 3 v. Special light illuminates



Battery cell tester

dial in dark places, dims when cell is  
low, or goes out when cell is dead.

Long, legible scale with "Dead,"  
"Discharged" and "Charged" mark-  
ings, can be read by anyone at a  
glance. Ruggedly constructed, yet  
light in weight.

Description: Adjustable prods fit  
terminals of any battery. One prod  
can be moved in a slotted holder to  
obtain proper spacing to test bat-  
teries with cells mounted lengthwise.  
Balanced handle fits hand. Design-  
ated GS No. 17.

Source: General Scientific Equip-  
ment Co., Dept. CP, 2700 W. Hunt-  
ingdon St., Philadelphia 32, Pa. ...  
or for more information check CP  
6865 on handy form, pages 2 and 3.

Speed changer backlash  
cut one-half by use of  
precision gears...

hobbed gears, 96 pitch, used in  
place of 48 pitch extruded

Uses: For instruments, controls,  
computers, recorders, regulators and  
similar applications.

Features: Precision hobbed gears  
of 96 pitch provide smoother, quieter  
operation, better angular precision and  
about one-half the backlash that is

# ATTENTION...



- MANAGEMENT
- CERAMIC ENGINEERS
- PRODUCTION ENGINEERS

REGARDLESS OF  
FORM...

and formula...  
If it's Lithium, we've got  
it. All are available in  
experimental or com-  
mercial quantities.

Through research and plant-  
test runs, Metalloy has de-  
veloped Lithium into conven-  
ient forms for a wide variety  
of commercial uses. Now you  
may obtain Lithium from us  
in any of these forms (lump,  
wire, ribbon, shot, rods,  
cartridges) and in any quan-  
tity you require.

Metalloy has always special-  
ized on Lithium research, ex-  
ploring all the possibilities  
of Lithium compounds in the  
field of chemistry and their  
application to industrial prob-  
lems.

Write today for information on Metalloy Lithium Chemicals for  
your requirements.

## METALLOY CORPORATION

RAND TOWER MINNEAPOLIS, MINN.

LITHIUM CORPORATION  
OF AMERICA, INC.

When inquiring check CP 6866 on handy form, pgs. 2-3

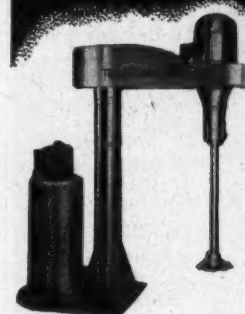
## Dissolve or Disperse...

2 to 20 Times Faster

WITH THE

# COWLES

## Ultra-Fast METHOD



Two to 20 times faster than conventional mixers, the  
Cowles Ultra-Fast Method handles the toughest dissolving  
and dispersing jobs in cycles that save up to 46½ hours  
running time. Yet this amazing method is not new... not  
revolutionary. It's just the simple application of classical  
physical laws, that have been given practical proof over  
the years in both the Cowles Hydrapulper, as well as in  
the Cowles Dissolver and Disperser.

Engineered to the Job

Standard dissolvers employing the Cowles Method are available  
in 4 different types, each adapted in motor speed, horsepower, design  
of impeller and chemical inertness of tank to the physical and  
chemical properties of the materials being treated. But special  
designs to fit special processes are regularly produced under reason-  
able delivery-date schedules. Let our engineers study your needs  
and make a recommendation. You may find your problem simpler  
than you think.

The Cowles Company  
INCORPORATED  
103 TRACKSIDE, CATUGA, N. Y.  
Associated: Alexander Mack, Ltd., Ottawa, Ont.

When inquiring check CP 6867 on handy form, pgs. 2-3

CHEMICAL PROCESSING



# SPEED UP

SLOW-FLOW MATERIALS



TARS  
PLASTICIZERS  
WAXES  
MOLASSES  
GLUES  
RESINS  
GREASES  
GUMS... ETC.

## USE ACRAWAT ELECTRIC DRUM HEATERS

FIT ALL STANDARD 22 1/4" DRUMS

- Proven Acrawatt THINSTRIP Construction.
  - 3 Heats: 3000 Watts 230 Volts.
  - Fast Heat Transfer.
  - Aluminized Steel Encased.
  - Enclosed Wiring Terminals.
  - Low Radiant Loss.
  - Fully Insulated.
  - Easy to Install and Remove.
- Kill time-consuming, costly slow-flow of viscous materials. Slip one or more Acrawatt Drum Heaters on your drums. Make cloggy, sluggish contents get a move on. Go on and off in a jiffy. Safe and simple to apply and operate. Use singly or in multiple. Save with Acrawatt reliability, long life ruggedness and efficiency. Order today.

ORDER NOW

EA. **\$19.50**

F.O.B. CHICAGO  
Spot Shipment  
Shipping Wgt. 10 Lbs.

FOR BETTER ELECTRIC HEATERS  
AT BETTER PRICES, LET US QUOTE

ACRA INDUSTRIAL ELECTRIC CO.  
3009 N. RAVENSWOOD AVE. CHICAGO 13, ILL.

When inquiring check CP 6868 on handy form, pgs. 2-3

## Easy does it! with BLACKMER HAND PUMPS

for SAFETY

GOOD HOUSEKEEPING & ECONOMY

... In any plant where liquids are dispensed.

Promote clean, safe floors, reduce fire hazards and save valuable liquids with these low-cost pumps.



Pump complete with crank, positive shutoff spout, drip pan with overflow back to container, and 1" x 42" long suction pipe for use on drums, barrels or other containers. Ten gallons per minute. Bung is threaded for 1 1/2 and 2-inch openings. Constructions: bronze-fitted, all iron, all bronze.

A permanent base unit pumps fuel or other liquids and oils from underground tanks. Below-ground storage is especially desirable where highly inflammable liquids are handled. The unit includes pump with crank and supporting stand with base, which acts as the suction pipe, and is threaded in the base bottom and side for 3/4" connections. A 12" discharge pipe is equipped with hose holder and 8 feet of gasoline-resistant hose with nozzle. Vacuum breaker for fast hose drainage is optional. 10 GPM capacity.

Unit consisting of pump with crank, 1" x 42" suction pipe, straight or taper bung, 1" x 12" discharge pipe with hose holder and vacuum breaker for fast draining of hose, 8' of 3/4" lined hose with bronze nozzle. Capacity, 10 gallons per minute. Widely used to transfer gasoline, diesel fuel and oil.

FOR DISPENSING POINTS IN  
PLANT—WAREHOUSE—STORES

Write for HPS—Hand Pump Bulletin

BLACKMER PUMP COMPANY  
GRAND RAPIDS, MICHIGAN

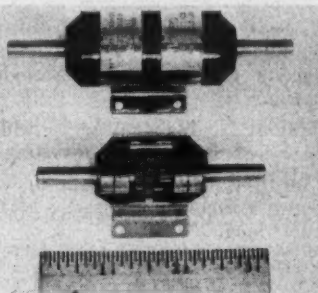
When inquiring check CP 6869 on handy form, pgs. 2-3

MARCH, 1950

## PROCESSING EQUIPMENT

encountered with the 48 pitch extruded gears used in standard units.

Description: Available in single or multiple sections and with more than 500 different ratios. Tentatively



Speed changers have 96 pitch gears

rated at 1/50th hp, speeds as high as 20,000 rpm on the high speed shaft, and torques as high as 1 1/2 pound-inches on the low speed shaft are practical.

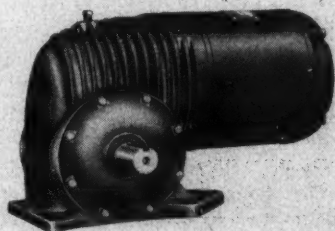
Source: Miniature speed changers are made by Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. . . . or for more information check CP 6870 on handy form, pages 2 and 3.

## 1-1/2 hp gear motor works on polyphase or single AC, DC . . .

larger ratings to 400 hp. include gear attachments

Uses: 1-1/2 hp gear motor for operation on single or polyphase alternating or direct current.

Features: Only two moving parts: the armature and output shafts. Only



1-1/2 hp gear motor

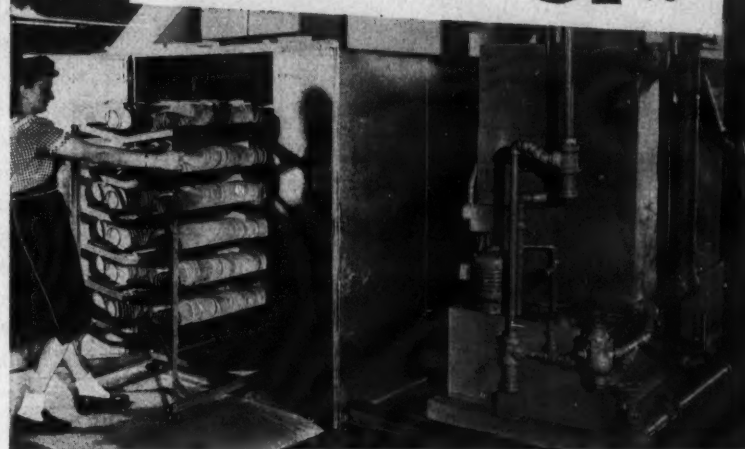
four bearings: two ball and two roller. Rugged, worm-type gears.

Description: Addition of this unit extends range of present line from 1/8 to 1-1/2 hp. Larger ratings up to 400 hp are available with gear attachments. Range of speeds obtainable with these motors in 25 to 280 rpm.

Source: Century Electric Company, Gear Motor Div., Dept. CP, 1806 Pine St., St. Louis 3, Mo. . . . or for more information check CP 6871 on handy form, pages 2 and 3.



## Kathabar REDUCES DRYING TIME 87%



ONE OF THE HUNDREDS OF WAYS

## Kathabar Humidity Control

MAKES PROCESSING OPERATIONS MORE PROFITABLE

● Drying of pasted shoe soles was a problem for a leading shoe manufacturer. Conventional drying methods were satisfactory in the low-humidity winter months but unsatisfactory in the high-humidity summer months. Also, it was desired to reduce the drying temperature from 110°F. to 95°F. if possible.

Without any major change in the existing drying equipment a Kathabar System Package Unit was installed. From the beginning of the operation it was successful . . . so much so a second Kathabar installation was started immediately.

Drying time was reduced from eight hours to one hour and product quality improved over the former method.

The Kathabar System is the better way to condition the air wherever humidity is a problem. GET THE FACTS TODAY!



RETURN THE COUPON for your copy

☐ Send booklets on Industrial and Comfort Humidity Conditioning.

☐ Have Humidity Engineer Call. No obligation.

NAME.....

TITLE.....

COMPANY.....

ADDRESS.....

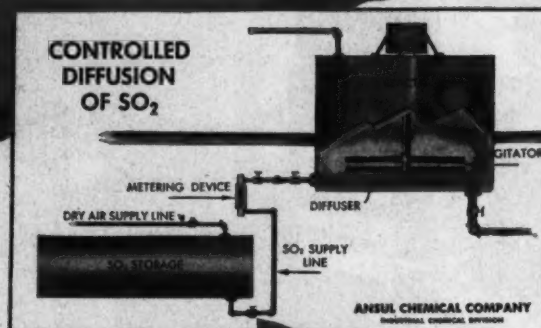
CITY.....STATE.....

SURFACE COMBUSTION CORPORATION • TOLEDO 1, OHIO

When inquiring check CP 6872 on handy form, pgs. 2-3

AN Easy WAY TO ACIDIFY...  
OR NEUTRALIZE... BLEACH...  
PRESERVE... DEOXIDIZE... REDUCE...  
DECHLORINATE...

### CONTROLLED DIFFUSION OF SO<sub>2</sub>



Better  
QUALITY CONTROL  
Improved  
PROCESS EFFICIENCY

IN  
One Continuous  
OPERATION

With the

# ANSUL CONTROLLED DIFFUSION METHOD

ANSUL SO<sub>2</sub> is a volatile, easy to control, multi-purpose acid. It permits the user to . . . 1) combine a number of individual process steps into one simple operation . . . 2) easily remove many product impurities sometimes difficult to eliminate . . . resulting in improved process efficiency and better quality control of the finished product.



99.98%  
(by weight)  
PURE

REG. U. S. PAT. OFF.

Write for Bulletin No. P-109 for more information and if possible, include a description of the application in your plant. Our Technical Staff will help you take full advantage of the benefits outlined above. In addition to our Bulletin describing the Ansul Constant SO<sub>2</sub> Concentration System, we will send you an informative treatise describing the properties, characteristics and industrial uses of Liquid Sulfur Dioxide . . . An Ansul Technical Staff Publication.

For your METHYL CHLORIDE applications  
Use ANSUL METHYL CHLORIDE

**ANSUL CHEMICAL COMPANY**  
INDUSTRIAL CHEMICALS DIVISION, MARINETTE, WISCONSIN  
50 E. 42nd St. New York, Lincoln-Liberty Bldg. Broad & Chestnut St. Philadelphia 7, Pa.

When inquiring check CP 6873 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**Crush and size semi-friable materials, handle lumps to 10" x 10" . . .**

unit uses only 2 shafts operating in anti-friction, grease-sealed ball bearings; is very compact

**Uses:** Crushes all semi-friable materials and will handle lumps up to 10" x 10" (size of feed hopper) to produce 3 grades or sizes through slotted fixed screen openings.

**Features:** Maintenance is held to absolute minimum by use of only 2 shafts operating in anti-friction, grease-sealed ball bearings.

Entire assembly is compact. Measurements: 2'4" wide, 10'9" long, 7'6" high.

### Description:

Breaker can be adjusted to produce any proportion of the 3 grades in accordance with user's requirements. Precision sizing control is obtained by an adjustable comb.

Small diameter cylindrical picks are made of Hy-Ten processed steel for toughness. All steel parts contacting chemicals are galvanized. Slotted fixed screen openings are 1/2 x 3/4" and 1 1/4 x 2".

Power is supplied to breaker and screw conveyor by single 1-1/2 hp motor directly connected to breaker. Power screening is obtained through perforated plates which also aid in holding maintenance to minimum.

Equipment includes a bagging hopper and a bag spreader to handle the 3 sizes of the final crushed product.

**Source:** "Economizer" crusher-sizer is built by Gifford-Wood Co., Dept. CP, Hudson, N. Y. . . or for more information check CP 6874 on handy form, pages 2 and 3.

### Include plain centrifugals in line of pumps . . .

others include diaphragm, plunger, and self-priming centrifugals for either light or viscous liquids

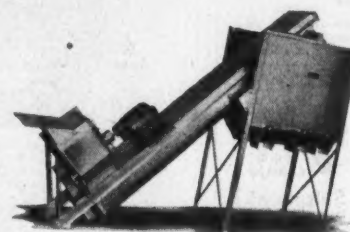
**Uses:** Plain centrifugal pumps for flooded-suction, light-liquid pumping requirements.

**Features:** Offered in either close- or long-coupled construction, these centrifugals are reported to be very simple in design. Have easily renewable sealing ring at suction inlet, and sealed ball bearings. Stuffing box (integral part of casing) is designed to contain a number of packing rings.

Enclosed-type impeller eliminates need for a second wearing ring; volute, regularly cast iron, can be furnished in special alloys. Impeller shaft is protected by a bronze sleeve at the stuffing box.

Motors are splash-protected and equipped with moisture-resistant insulation. Explosion-proof or fully-encased motors are available. Rigidity and balance are assured by supports for the close-coupled types, and by sturdy 1-piece mounting frames for the long-coupled types.

**Description:** Type SC and SL centrifugals are made in 1 to 4" sizes with capacities from 10 to 1000 gpm. Pumps consist of casing, impeller with shaft sleeve, and driving



Combination crusher-sizer

## Shaft Packing No Chemical Can Attack

Teflon "Chemiseal" #711 Packing Stays in Service Months Where Other Packings Failed in Hours

"We've got a pump handling hypochlorites," a paper manufacturer told us, "and we can't find a packing that will last more than 5 hours." So we sent him a set of Chemiseal #711. It went into continuous service in November. It's still in there and going strong months later.

A steel plant tried a #711 packing last summer on a pump handling coke liquor. Recently they ordered #711 for 40 more pumps.

There are hundreds of similar cases in our files.

### CHEMISEAL #711 SHAFT PACKING



### CHEMISEAL #711WX SHAFT PACKING



No chemical — acid, solvent, caustic, oil or gas — can attack or dissolve a Teflon Chemiseal #711 or #711WX packing. "Chemiseal" non-corroding, non-contaminating, heat-resisting gaskets, packings, adapters and expansion joints can save you hundreds of dollars and countless production delays.

Phone, write or bring your gasket and packing problems to —

**UNITED STATES GASKET CO.**  
618 N. 10th Street  
Camden, New Jersey

When inquiring check CP 6875 on handy form, pgs. 2-3

CHEMICAL PROCESSING

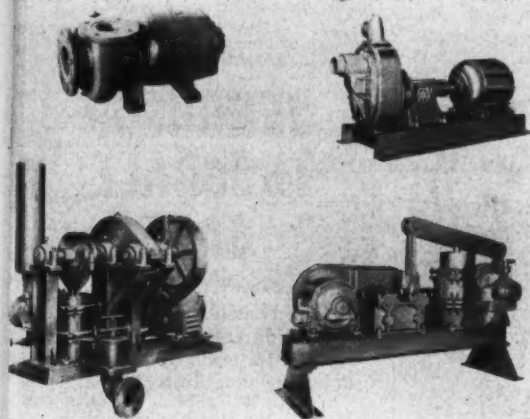


## PROCESSING EQUIPMENT

motor; may be installed and operated in vertical or horizontal position. Motors are  $\frac{1}{2}$  to 30 horsepower, depending on size.

Other pumps in manufacturer's line include: (1) self-priming centrifugals for suction-lift, light-liquid pumping applications. These are 1- $\frac{1}{2}$  to 10" in size; capacities are from 15 to 3500 gpm. Can be electric-motor, belt, or engine driven.

(2) Diaphragm and plunger types in 3 and 4" single, and 4" double sizes with capacities to 140 gpm are fur-



Some pumps included in line of centrifugal, diaphragm, plunger types

nished for viscous-liquid pumping. (3) Heavy-duty, plunger-types in 4, 6, and 8" sizes with capacities to 360 gpm are furnished for pumping sludges. High pressure models are included in this line.

Source: Marlow Pumps, Dept. CP, Ridgewood, N. J. . . . or for more information check CP 6876 on handy form, pages 2 and 3.

### 15-lb steam from small electric boiler . . .

2000 and 4000 watt units have safety relief valve, thermostat, pressure switch, level gauge

Uses: For generating small amounts of low pressure steam for laboratory use, other small applications.

Features: Blanket-type heating elements do not produce hot spots, prevent scaling and lime deposits. Compact generators can be placed close to point of use.

Description: Small electric steam generators are available in 2000 and 4000 watt sizes, with either steel or silicon bronze boilers. Those with steel boilers are designated 2000S and 4000S; silicon bronze units are known as 2000B and 4000B.

Heavy thermostat contacts shut off power when temp runs beyond that of 15-lb steam. Long thermostat tube runs through center of boiler. Other safety features are safety relief valve, pressure switch, water-level glass gauge and Fiberglas insulation.

Units are furnished for either 110 or 220 v. AC. Smaller units weigh 70 lbs, are 13" in diam., 22" high. Larger models weigh 90 lbs, are 13" in diam., 35" high. All are supplied with boiler feeder.

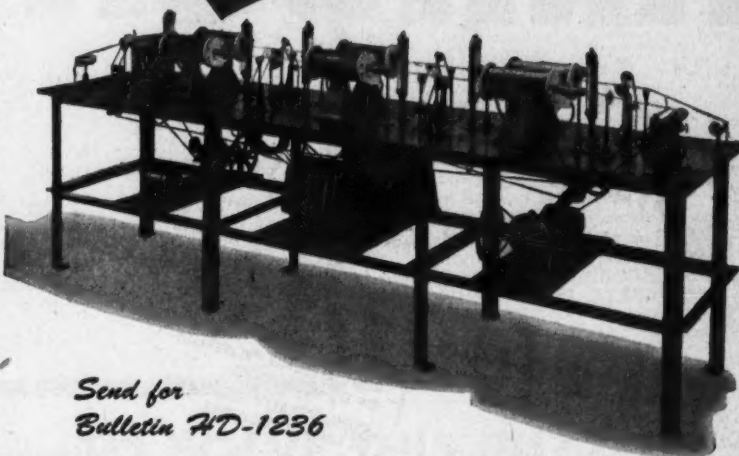
Source: Barton Products, Inc., Dept. CP, Defiance, O. . . . or for more information check CP 6877 on handy form, pages 2 and 3.

## Improved Filament Wire

The use of six Multiple Unit Combustion Tube Furnaces as heat sources in the Eisler 32-H6 Wire Coating Machine again illustrates the adaptability of these furnaces in a production tool set up. They are used to heat filament wire preparatory to the application of coating for improved electronic tubes. An increased use of these furnaces for production tools as well as their varied use in analytical research has caused them to become standard with many manufacturers. Bulletin HD-1236 details Combustion Tube Furnaces — send today for this and other Multiple Unit laboratory furnace bulletins.

Send for  
Bulletin HD-1236

with HEVI DUTY  
MULTIPLE UNIT FURNACES



### HEVI DUTY ELECTRIC COMPANY

LABORATORY FURNACES **MULTIPLE UNIT** ELECTRIC EXCLUSIVELY

MILWAUKEE 1, WISCONSIN

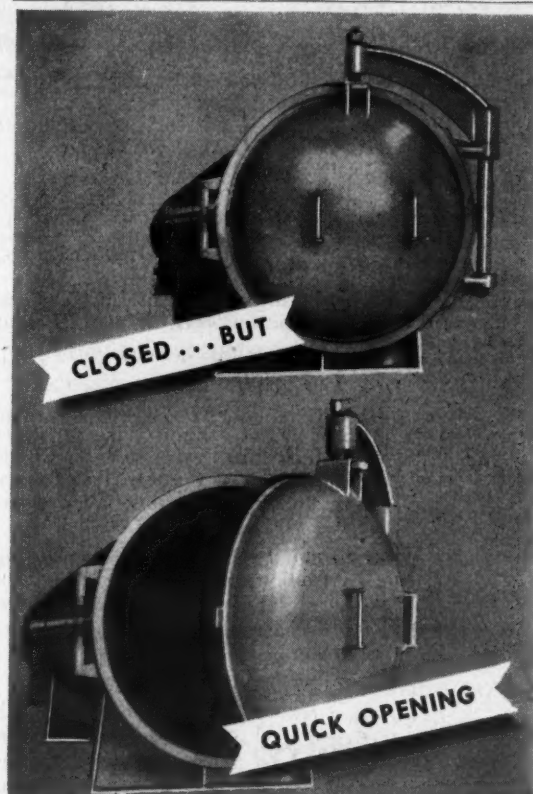
An Eisler No. 32-H6 six furnace wire coating machine. Eisler Engineering Company, Inc., Newark, New Jersey.

When inquiring check CP 6878 on handy form, pgs. 2-3

Look into this  
in a Hurry!

Blaw-Knox Quick Opening Doors for curing chambers, vulcanizers, and similar equipment, are *quick—tight—boltless*. In diameters up to 10 ft., they may be used on pressures up to 250 psi. They are boltless and rim-locking.

This is only one of a long line of Blaw-Knox standard equipment items for the Process Industries. See Blaw-Knox Bulletin No. 2307.



CLOSED . . . BUT

QUICK OPENING

PROCESS EQUIPMENT DEPARTMENT

**BLAW-KNOX**

DIVISION OF BLAW-KNOX COMPANY

2090 FARMERS BANK BLDG., PITTSBURGH 22, PA.

Other Offices in Principal Cities

When inquiring check CP 6879 on handy form, pgs. 2-3

# AMIOCA

**100%  
AMYLOPECTIN  
STARCH**

**UNIQUE IN**

PASTE AND FILM  
PROPERTIES

Clear  
Cohesive  
Non-jelling  
Non-skinning  
Highly Viscous  
Adhesive

ABILITY OF PASTES TO RECOVER  
ORIGINAL PROPERTIES AFTER FREEZING  
EASE OF CONVERSION BY  
AMYLOLYTIC ENZYMES  
REMOISTENING PROPERTIES  
OF ITS DRIED FILMS  
COMMERCIALY AVAILABLE  
IN LARGE QUANTITIES

The unique properties of pure AMIOCA and its modifications — as successfully developed by National Starch Products — should be studied by the food, paper and textile fields. These properties should be compared with tapioca, potato and other tuber starches; and with natural gums such as arabic, tragacanth, karaya and other thickeners.

**DESCRIPTION:** AMIOCA is unique among starches because it consists entirely of amylopectin. It is generally believed to be a more or less branched or non-linear polymer of glucose. Its molecules, being highly hydrated and unable to readily associate, give rise to highly viscous, clear, cohesive pastes free from any tendency to thicken or jell on ageing.

Other commercial starches such as corn, tapioca, wheat, potato, etc., contain two components — usually 20-30% amylose in addition to amylopectin. Amylose is believed to be a linear or straight chain polymer of glucose. In pastes, its molecules tend to associate with each other and with the amylopectin molecules. This tendency leads to thickening, jelling and increased opacity.

AMIOCA comes as a white powder or in pearl form resembling ordinary corn starch. It gelatinizes sharply, starting at 70°C and proceeding over a range of only 8°C. It has a peak hot viscosity of approximately 4,000 centipoises in 20 parts of water; and 15,000 centipoises in 10 parts of water. AMIOCA modifications range from materials which require from 20 or more parts of water to those requiring less than 1 part of water at a comparable viscosity.

**POSSIBLE APPLICATIONS:** AMIOCA and AMIOCA modifications offer *textile sizings* which are non-jelling with good adhesive and film forming properties and with excellent rinsability . . . *textile finishes* with clear, glossy films, and resistance to iron-browning . . . *grease-proof tub sizings*, with non-jelling properties that permit high solids application . . . *paper beater sizings* that are non-jelling and permit a high degree of hydration . . . *paper coatings* with higher solids and greater binding power at a given viscosity . . . *foods* with modified jelling properties, clarity and freedom from cereal taste . . . *frozen foods* with ability to recover their original properties after defrosting . . . *drum dried or dehydrated foods* with better stability and clarity.

**WE'RE READY** to match our research and laboratory efforts with yours in further exploration of Amioca starch applications to your products. Address: National Starch Products, Research and Development Labs., 270 Madison Avenue, New York City. Plants: Dunellen, N. J., Chicago, Indianapolis and San Francisco.

**National  
STARCH PRODUCTS**

STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

When inquiring check CP 6880 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

### Recommend extinguishers for flammable liquid and electrical fires . . .

new model has improved construction; extinguishing chemical is non-toxic, non-corrosive

**Uses:** Dry-chemical type fire extinguisher recommended for use on flammable liquid fires, and on electrical fires of any voltage.

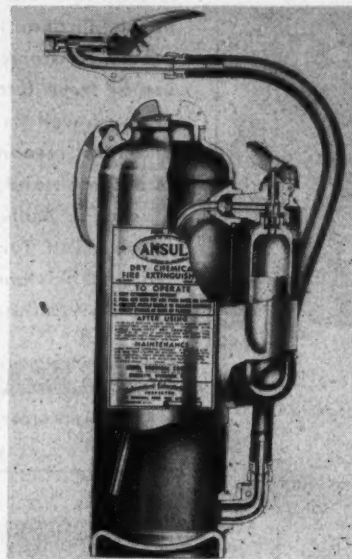
**Features:** New model embodies improvements over its predecessors — threaded hose connections, swivel couplings on hose, improved cartridge receiver, water-tight construction throughout.

Extinguishing chemical is water-repellent, non-toxic, non-corrosive, non-abrasive, non-conductor of electricity; will not freeze, solidify, deteriorate, or evaporate.

#### Description:

Model B extinguisher is available in 20 and 30 pound sizes. Further information on extinguishers is available in maker's File No. 441.

**Source:** Product of the Ansul Chemical Company, Dept. CP, Marinette, Wis. . . . or for more information check CP 6881 on handy form, pages 2 and 3.



Improved dry-chemical fire  
extinguisher

### Mixed-bed deionization provides a chemically pure water . . .

units hold uniform pH, give high-quality water during intermittent operation, need less space and piping

**Uses:** Complete deionization to give a chemically pure water.

**Features:** Improved quality of effluent; maintenance of constant pH of 7.0 plus/minus 0.1 throughout cycle; uniform performance when used intermittently; less space, piping and controls; greater regeneration efficiency; lower regeneration time; less rinse water required after regeneration.

**Description:** Mixed-bed deionizer may be considered as a multiple-pass deionizing system containing alternate layers of cation and anion exchange resins. In such a column of mixed resins 24" deep, there are theoretically over 400 such alternate layers, giving the equivalent of over 400 deionizing units operating in series.

On a raw water containing 360-ppm dissolved solids, an effluent with an average specific resistance of 12,000,000 ohms per cu cm is readily obtained. The specific resistance reaches a maximum of 25,000,000 ohms per cu cm.

Because of the intimate contact of the resins, high-quality



**Assures  
Positive  
Distance  
Reading  
of  
Liquid  
Levels**

## JERGUSON TRUSCALE GAGE

**T**HE modern design JERGUSON TRUSCALE GAGE gives new accuracy for reading of liquid levels in boilers, deaerating tanks, etc.

Here is the distance reading gage which incorporates all of the newest engineering features! The Jerguson Truscale has exceptional sensitivity, with the ability to register changes as small as 1/2 of 1% of range! The translucent dial scale is clearly lighted from behind, and is easy to read.

The Truscale Gage may be equipped with positive alarm system. Lights flash and horns sound at specified key points when liquid level falls dangerously low or rises too high. Foolproof anti-surge mechanism for use on ships. Available for panel, pedestal, or wall mounting. It will pay you to investigate.

**JERGUSON TRULEVEL GAGE**  
Hydrostatic type distance reading gage with inverted U-tube manometer. Water level always visible with space above showing brilliant red. Built-in feature makes possible checking of gage accuracy in few seconds.

Write today for free illustrated  
DATA UNITS on Jerguson Truscale  
and Trulevel Gages

**JERGUSON**  
Gages and Valves for the  
Observation of Liquids and Levels

**JERGUSON GAGE & VALVE COMPANY**  
100 Fellowship, Somerville 45, Mass.  
Representatives in Major Cities  
Phone Listed Under JERGUSON

When inquiring check CP 6882  
on handy form, pgs. 2-3

CHEMICAL PROCESSING



## PROCESSING EQUIPMENT

water is instantly produced, even after unit has been out of service for a considerable period of time. No rinsing is required. This intimate contact also permits use of lower regenerant levels, resulting in greater regeneration efficiency. Complete regeneration cycle can be carried out in 30 to 40 minutes.

Water requirements for complete regeneration and rinse of manufacturer's mixed-bed deionizer are less than one-half those of a conventional unit, he reports.

**Source:** Illinois Water Treatment Company, Dept. CP, 893 Cedar St., Rockford, Ill. . . or for more information check CP 6883 on handy form, pages 2 and 3.

### **flexibility of operation is big feature of variable-speed agitators . . .**

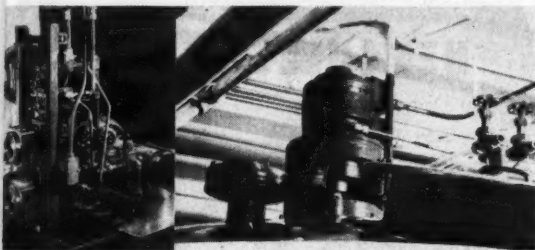
installed singly or in groups; group-installation permits cutting any combination in or out

**Uses:** Variable-speed hydraulic agitators for production or pilot plant use.

May be installed on user's present equipment, or furnished as complete fabricated tank and agitator in a single package. Also for installation in groups, with entire group being operated by one electrically-driven power unit. Such installation permits any combination of agitators to be cut in or out independently.

**Features:** Provides infinitely variable speed, from 15 rpm to limits imposed only by design of individual equipment. Leaves more room for manholes, nozzles and other openings, since only the fluid motor is mounted on the tank top, occupying a space of 12 to 16" diam. Nominal headroom requirements usually do not exceed 24".

Further space-economy, and increased safety in processing hazardous substances, may be realized by locating the electric motor and oil reservoir at any distance from tank



10-hp variable-speed hydraulic unit operating double installation of agitators in two 1500-gal SS tanks at a pharmaceutical plant. Controls for adjusting speeds from 15 to 93 rpm are at left. At right is one of two fluid motors installed in special well, mounted in 22" headroom

or vat, or, if conditions warrant, beyond a firewall. Increased flexibility and economy of installation and operation are possible in the case of group-installation. When installed on equipment already in use, the simplified circuit-design greatly facilitates installation.

**Description:** Power is derived from a directly-connected fluid motor, driven by an electrically-operated hydraulic pump. Controls may be arranged for convenience of operator.

Sizes range from 1 to 50 hp; larger sizes are special.

**Source:** Emerson-Scheuring Tank & Mfg. Company, Inc., Dept. CP, 21st St. & Martindale Ave., Indianapolis 7, Ind. . . or for more information check CP 6884 on handy form, pages 2 and 3.

## IF YOU GET OFF TO THE RIGHT START IT'S EASIER



Transform this square into five small squares, all equal to one another, whose total area shall be equal to this square. Par for this puzzle is 10 minutes. LOOK FOR THE SOLUTION WHICH WILL APPEAR NEXT MONTH.

## TO SOLVE THIS PUZZLE...

*or your drying problem...*

There is an amazing similarity between a simple thing like solving this puzzle . . . and a much more complex matter like solving your drying problem. In both instances—the solution is reached with greater ease—if you get off to the right start.

Getting off to the right start in the solution of your drying problem means calling in Proctor engineers the moment you realize that drying equipment is to be a part of your processing line. In fact, it may even start with a long distance telephone conversation in which you can iron out the answers to certain fundamental questions which may save hours of your engineers' time.

First of all—early consideration of drying equipment is important, for that equipment may well have an important bearing on the preliminary and subsequent processing. Because of this, it pays in dollars and cents to

know something about the basic type of drying system that you are planning to use at the time you consider each of the other steps in the process.

Countless hours of laboratory work on the part of your technicians may be saved by consulting Proctor engineers early. Honestly, Proctor engineers are more interested in helping you solve your problems . . . more concerned with saving you money and effort than with merely selling equipment. The facilities of Proctor research laboratories are available to you *without cost or obligation*. Those who have availed themselves of these facilities have found that it has always worked out to their advantage. If you have a drying problem—remember getting off to the right start will help speed the solution . . . and the right start includes early discussion of that problem with Proctor engineers. Call or write today.

**PROCTOR & SCHWARTZ INC. • 663 TABOR ROAD • PHILADELPHIA 20, PA.**

When inquiring check CP 6885 on handy form, pgs. 2-3

## CENCO SCIENTIFIC INSTRUMENTS AND LABORATORY SUPPLIES

are now used in thousands of laboratories throughout the world.

Available to you on request is new literature describing:

1. Cenco High Vacuum Pumps, Gages and accessories.
2. Cenco Titration-pH Apparatus (for the control of neutralizations, oxidation-reduction reactions and pH measurements).
3. Cenco Constant Temperature Ovens, Incubators, Sterilizers and Water Baths.



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**CENTRAL SCIENTIFIC COMPANY**

Scientific Instruments • Laboratory Supplies

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NEW YORK BOSTON SAN FRANCISCO NEWARK LOS ANGELES TORONTO MONTREAL

When inquiring check CP 6886 on handy form, pgs. 2-3

## Save with MONEL... Netting, Banding, Tie Wire



With rustproof, corrosion-resistant Monel® insulation netting, banding, and tie-wire, you can count on important long run economies.

You save on labor, scaffolding, and materials because Monel insulation netting, banding, clips, wire last years longer ... even in corrosive industrial or salt sea atmospheres.

Installation is easy, too, because Monel is tough yet pliable. It is applied as readily as galvanized, but it is corrosion-resisting all through — there is no coating to corrode away.

Find out how little it costs to get this added protection and reduced insulation maintenance costs. Write for full information today.

THE INTERNATIONAL NICKEL COMPANY, INC.  
67 Wall Street, New York 5, N. Y.

**MONEL...for minimum maintenance**

When inquiring check CP 6887 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**Illuminate magnifiers  
to improve inspection  
of close work...**

fluorescent units floodlight area under 5" diameter lens

**Uses:** For rapid, accurate inspection by assemblers, toolmakers, machinists and others whose work involves small components and close, intricate tolerances.

**Features:** Magnifiers are equipped with a fluorescent, floodlighting work area. Bench type (illustrated) permits adjustment to any desired position.

**Description:** Offered in bench and portable models, both with 5" diameter lens. Bench type has steel base, two adjustable friction arms and two swivels — one at base and one at top of lens frame.



5" fluorescent magnifier

Portable type is similar to bench model except that it is fitted with a comfortable hardwood handle in place of arms and base. It is practical for use inside of machines and other out-of-the-way places.

Both magnifiers are furnished complete with 6' of rubber cord and ballast plug for connection with 110-120 volt, 60 cycle circuit.

**Source:** Fluorescent magnifiers are available from Industrial Products Co., Dept. CP, 2834 N. 4th St., Philadelphia 33, Pa. ... or for more information check CP 6888 on handy form, pages 2 and 3.

**Quick voltage checks  
locate wiring  
troubles...**

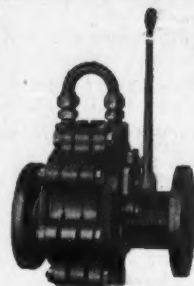
ruggedness, accuracy combined in small voltmeter

**Uses:** Checks either AC or DC voltages, indicates whether AC or DC. Useful for checking continuity, checking blown fuses, locating grounded components, detecting live wires, similar troubles.

**Features:** Accurate within 2 volts at 110v. AC. Glow-lamp indicator is designed for min. of 25,000 hrs service, is not subject to false indications.

**Description:** Scale of meter is 90

## Valves That Keep VISCOUS MATERIALS Flowing Freely



When you handle coal tar products, asphalts, resins, waxes, molten sulfur, varnish and other materials which congeal at ordinary temperatures, you won't be troubled with clogged valves if you use EVERLASTING Steam Jacketed Valves.

The ample jacket space of these valves surrounds the ports as well as the body...

provides extensive heating surface and correct temperature to insure fluidity. Besides, the design of the valves is quick acting... non-wedging... and self-grinding... and they have the straight-through flow and lasting tightness that have made EVERLASTING Valves famous for over 40 years. Write for complete information.

EVERLASTING VALVE CO., 49 Fisk Street, Jersey City 5, N. J.  
Trade Mark "EVERLASTING" Reg. U. S. Pat. Off.

EV-3441

## Everlasting Valves

for everlasting protection

When inquiring check CP 6889 on handy form, pgs. 2-3

## PROMPT DELIVERY

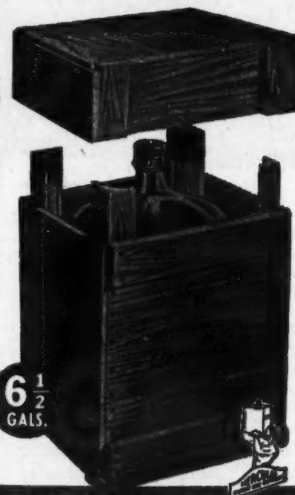
### HERCULES Aero

(RUBBER CUSHIONED)  
and

**HERCULES**  
(CORK CUSHIONED)  
**CARBOY BOXES**

Available in

**5 & 13** gallon sizes  
to comply with ICC-  
IA. Available in 6 1/2  
gallon size to comply with specification ICC-ID.



6 1/2  
GALS.

**NATIONAL BOX & LUMBER COMPANY**

HOME OF HERCULES CARBOY BOXES • NEWARK 5, N. J.

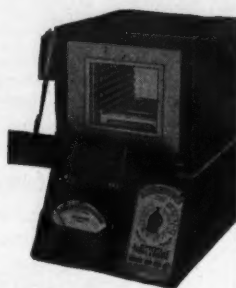
When inquiring check CP 6890 on handy form, pgs. 2-3

CHEMICAL PROCESSING



**You Get  
IDENTICAL  
PERFORMANCE  
Every Time!**

### HUPPERT Model 2 Deluxe FURNACE



You maintain any temperature on-the-line automatically from 325° to 1000° F. with the Huppert Model 2 Deluxe—on laboratory testing, tempering, annealing, etc. Also ideal for precision small unit production. Two pilot lights indicate furnace operation and throttling action. Multi-impedance; all-steel construction; Fahrenheit or Centigrade pyrometer. Special alloy elements, tight closing counter-weighted door. I.D. 4 1/4" x 3 1/4" x 4 3/4"; O.D. 12" x 13" x 12". Current consumption 800 watts.

Complete with Pyrometer & Automatic Control—\$75.00

All Stainless Steel Construction—\$90.00

Write TODAY for literature

## K. H. HUPPERT CO.

6822 Cottage Grove Avenue  
Chicago 37, Illinois

When inquiring check CP 6891 on handy form, pgs. 2-3

## Uniform Separation

FOOD PRODUCTS — CHEMICALS — METALLICS  
NON-METALLIC MINERALS

The new model GAYCO Centrifugal air separator makes possible the uniform and increased recovery of fine material within a range of 40 to 400 mesh.

- Greater Capacity
- Cleaner Trailings

- 99% Through 325 Mesh

- 25% to 30% greater recovery of fines

- Not affected by variation in speed or rate of feed



TIMKEN BEARING EQUIPPED

**The Gayco Separator  
Handles  
SUCH PRODUCTS AS**

BAGASSE GROUND HAIR  
CASEIN GROUND OATS  
COCOA POWDER GUM ARABIC  
COTTONSEED SOY FLOUR  
MEAL SPICES  
FERTILIZER SUGAR

## Universal Road Machinery Co.

RUBERT M. GAY DIVISION 117 Liberty St. New York 6, N. Y.  
Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal  
FACTORY & LABORATORY, KINGSTON, N. Y.

When inquiring check CP 6892 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

to 260 volts. Units are equipped with 12" test leads, insulated test prods.

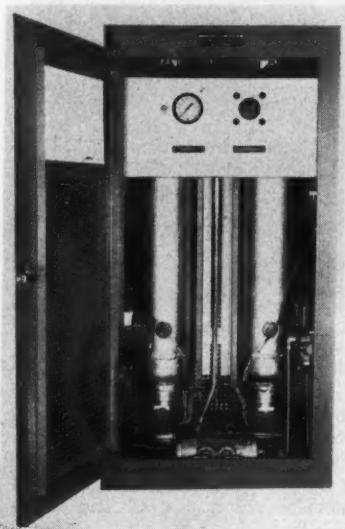
Source: Industrial Devices, Inc., Dept. CP, Edgewater, N. J., is the maker . . . or for more information check CP 6893 on handy form, pages 2 and 3.

### Prevents condensate in instrument air lines . . .

has continuous drying cap. of 25 or 50 SCFM air

Uses: Designed primarily for eliminating the formation of condensate in air lines of industrial instruments. Also for protecting such out-of-doors lines from freezing.

Features: Fully automatic. Can be mounted within 6" of a wall, since



Dehumidifier

inspection and servicing can be accomplished via door at front of cabinet.

Description: Model 50 EIAC, illustrated, has continuous drying capacity of 50 SCFM air at 100 psig and 70°F, to max. dewpoint of minus 40°F. It is also made for 25 SCFM air (Model 25 EIAC).

Unit operates from 110v, 60 cycle line current. Cabinet dimensions are 22" wide, 18" deep, 43" high, for floor or table mounting, with all piping and electrical connections terminating at bottom-rear of cabinet interior.

Source: Industrol Corporation, Dept. CP, 88-35 76th Ave., Glendale, Brooklyn 27, N. Y. . . . or for more information check CP 6894 on handy form, pages 2 and 3.



## Blueprint for handling Molten Chemicals

The welders in the above view are referring to a blueprint . . . it shows them how to assemble the tank they are erecting. Chemical men should direct their attention to the tank itself . . . it illustrates how a special metal can be used to combat corrosion.

This "smelt" tank is 17-ft. in diam. by 15-ft. high and is made of stainless clad steel. It is installed at a pulp and paper mill in the South. Molten chemical "smelt" flows from a furnace into the tank. It is then mixed with water to form a diluted caustic solution which is known as "green liquor." The green liquor is clarified, treated and then reused in making pulp for kraft paper board. We also supplied a second stainless steel clad tank, 15-ft. in diam. by 10-ft. high at this plant.

Corrosion-resistant metals like stainless steel may help you solve the troublesome problems that result when you use or produce corrosive chemicals. The right material, properly applied, often prolongs the life of your vessels, avoids nasty cleaning and costly repairs, and eliminates the possibility of the tank's contents becoming contaminated.

We build all types of tanks and other plate structures of stainless, chrome, and nickel steels; and of non-ferrous alloys such as monel, nickel, aluminum and everdur. For information on structures built of solid stainless, stainless clad or lined with corrosion-resistant metals, write our nearest office.

## CHICAGO BRIDGE & IRON COMPANY

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Chicago 4 . . . . . 2116 McCormick Bldg.	Salt Lake City 4 . . . 507 West 17th, South St.
Cleveland 15 . . . . 2212 Guildhall Bldg.	San Francisco 11 . . 1245—22 Battery St. Bldg.
Detroit 26 . . . . . 1533 Lafayette Bldg.	Seattle 1 . . . . . 1307 Henry Bldg.
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Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 6895 on handy form, pgs. 2-3



**10 TIMES HIGHER ABRASION RESISTANCE . . .**  
standard abrasive wheel test



**4 TIMES HIGHER SNAG RESISTANCE . . .**  
standard needle test



**MUCH HIGHER CHEMICAL RESISTANCE . . .**  
standard strip immersion tests

. . . than natural rubber or standard synthetics



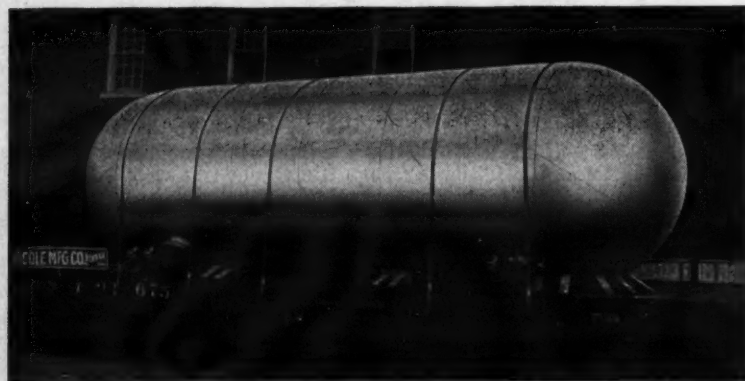
**SURETY SURESEAL SYNTHETIC RUBBER GLOVES**

**ADD UP TO SAFER HANDS, LONGER WEAR, LOWER HAND PROTECTION COSTS.**

Ask for Surety's unique Glove Selector, the quick guide to the right glove material for your operations. Dept. C

At the Greater New York Safety Show, Booth 60

When inquiring check CP 6896 on handy form, pgs. 2-3

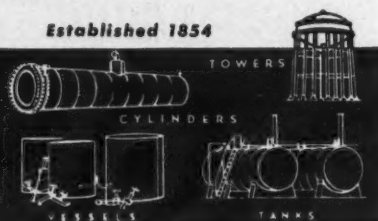


**COLE ALUMINUM TANKS**

**R.D. COLE**  
MANUFACTURING CO.  
NEWNAN, GA.

We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.9% pure aluminum for hydrogen peroxide from 5000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.

Established 1854



When inquiring check CP 6897 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**Safety messages flash across screen of compact cabinet . . .**

letters perforated into tapes; unit has fluorescent light

**Uses:** For impressive presentation of safety messages to employees.

**Features:** Messages are spelled out in bright dots of light which move along continuously like electric bulletins.

**Description:** "Flashograph" consists of a sturdy steel case with black crackle finish. A glass window is set into the case. A selection of more than 50 different safety messages are available on endless perforated tape. Illumination is provided by a fluorescent lamp. Tape continuously passes the glass window.



Continuously flashes safety message

Typical messages are: "Be Careful Today; Be Safe and Alive Tomorrow," "If You Care to Keep Working, Keep Working With Care" and "Get First Aid — Don't Be Scratched off Your Job." Complete "Flashograph" measures 23 x 3 x 6" and weighs 6 1/2 lbs.

**Source:** Mine Safety Appliances Co., Dept. CP, Braddock, Thomas & Meade St., Pittsburgh 8, Pa. . . or for more information check CP 6898 on handy form, pages 2 and 3.

**7-1/2 secs to put out 16 sq. ft. blaze . . .**

6-lb carbon dioxide extinguisher for electrical, liquid fires

**Uses:** For smothering flammable-liquid and electrical fires.

**Features:** UL-approved model extinguished 16 sq. ft. gasoline fire in 7-1/2 seconds in official tests.

**Description:** Portable model weighs 6 lbs. Thumb trigger releases carbon dioxide gas. Only one hand is needed to operate extinguisher.



**Allis-Chalmers Dielectric Heaters**

**The ONE Solution To Many Drying Problems**

**D**IELECTRIC HEATING is often the only possible solution to unusual heating or drying problems requiring speed or uniformity, or both.

You are assured of uniform drying from inside to outside because every molecule of the material is heated simultaneously. In addition, drying time is cut to a few minutes.

Conveyors can carry material between electrodes for drying. Space requirements are small.

Get engineering and cost studies from your nearby Allis-Chalmers Sales Office, or write direct.

ALLIS-CHALMERS, 1151A SO. 70 ST.  
MILWAUKEE, WIS.

A-2999

**ALLIS-CHALMERS**



When inquiring check CP 6899 on handy form, pgs. 2-3



Motor Driven APCO Two Stage, Water Jacketed, Turbine-Type Pump with Flange Connections.

**SINGLE AND TWO STAGE**  
•  
**1750 R.P.M.**  
•  
**WIDE RANGE OF SIZES**  
•  
**FOR SCREW OR FLANGE CONNECTIONS**

**Write for BULLETIN 111-WJ**

These notable pumps are made available "by request" of many of our engineer friends. Water jacketed APCO pumps were developed specifically for the efficient handling of high temperature and highly volatile liquids. They are designed to compensate for expansion and contraction due to heat. Because APCO's multi-vaned impeller handles vapor or air along with the liquid there can be no vapor lock within the pump. The cool liquid in the water jacket reduces the temperature of any liquid leakage through the extra deep stuffing boxes — thus flashing or vaporizing of the leakage is prevented. May be made of any machinable metal for handling corrosives. Requires but small amount of such special metal — with resultant economy. We invite your consideration of the many features of these fine pumps.

**AURORA CENTRIFUGAL PUMPS**

A complete line, notable for streamline coordination between impellers and shells, including Single and Two Stage Horizontally Split Case, Side Suction, Vertical, Non Clog, Sump, Mixed Flow, Special Design, etc.

**DISTRIBUTORS IN PRINCIPAL CITIES**



62 Loucks St., AURORA, ILLINOIS

When inquiring check CP 6900 on handy form, pgs. 2-3

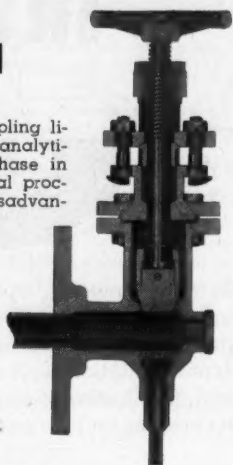


## ALOYCO

### Introduces Better Sampling Valves in Stainless Steel

THE use of valves for sampling liquids to secure accurate analytical data is an important phase in the control of many chemical processes. To eliminate the disadvantages of standard valves for this service, Alloyco has developed valves specially designed for sampling. These are available in Alloyco 20, 18-8S, 18-8SMo and other alloys. Write for Bulletin No. 4.

● Alloyco Sampling Valve No. 733 (shown) has surge chamber eliminating splattering; vertical stem; inlet flange may be tapped to receive pipe extension for sampling in zones away from side walls. Other sampling valves (not shown) No. 732½ and No. 731½.



### ALLOY STEEL PRODUCTS CO., Inc.

1302 W. ELIZABETH AVENUE, LINDEN, NEW JERSEY

ATLANTA — CHICAGO — HOUSTON — LOS ANGELES — NEW YORK —  
PITTSBURGH — WILMINGTON

When inquiring check CP 6901 on handy form, pgs. 2-3

## COOPER ALLOY

### Offers a Complete Line of STAINLESS STEEL HOSE FITTINGS

Couplings, nipples, caps and miscellaneous fittings are available from stock in stainless, nickel and monel with iron pipe size or hose threads. Ideal for joining chemically resistant natural or synthetic hose materials.



Write For Descriptive Folder

THE **COOPER ALLOY** FOUNDRY CO.  
HILLSIDE, NEW JERSEY

THE WORLD'S LARGEST FOUNDRY DEVOTED  
EXCLUSIVELY TO THE CASTING OF STAINLESS STEEL

## PROCESSING EQUIPMENT

Source: Randolph Laboratories, Inc., Dept. CP, 8 E. Kinzie St., Chicago 11, Ill. . . or for more information check CP 6903 on handy form, pages 2 and 3.

### Variable transformers for 50/60 cycle AC applications . . .

improved design assures longer life, greater strength

Uses: Improved variable transformers, for 50/60 cycle AC applications.

Type 116 operates from 115v, 50/60 cycle source to deliver 0-135v, 7.5 amps output; Type 216 has output of 0-270v, 3.0 amps from 230v, 50/60 cycle, 1 phase.

Features: Diecast aluminum terminal box on cord-plug models adds strength plus longer service. Extra-heavy phenolic plastic terminal board.



Variable transformer

Solder-screw terminals arranged for better spacing and faster, more positive connections.

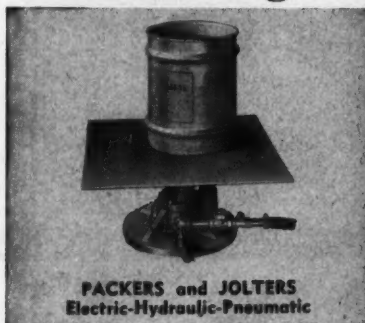
Barriers between terminals reduce short circuit hazards. New fusing arrangement on cord-plug models. Twist-lock holder on side of terminal box simplifies access and replacements. Heavy-duty "on-off" switch of cord-plug models is repositioned to avoid interference with input cord and output receptacle.

Description: All improvements are made within old standard mounting dimensions, to conform to existing panel layouts. Ratings of Types 116 and 216 remain same. Polarity identification is provided on cord-plug models for requirements involving ground loads. Trade name: Powerstat.

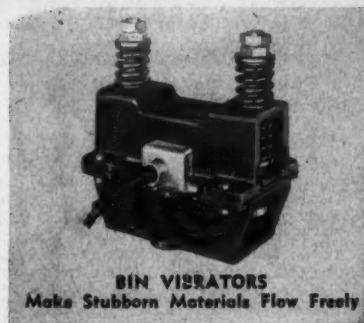
Source: The Superior Electric Company, Dept. CP, Hannon Ave., Bristol, Conn. . . or for more information check CP 6904 on handy form, pages 2 and 3.

# SYNTRON

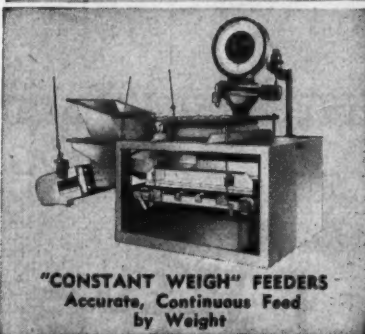
## For Bulk Material Handling



PACKERS and JOLTERS  
Electric-Hydraulic-Pneumatic



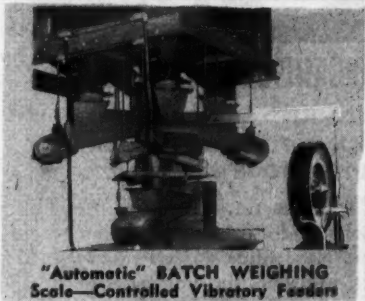
BIN VIBRATORS  
Make Stubborn Materials Flow Freely



"CONSTANT WEIGH" FEEDERS  
Accurate, Continuous Feed  
by Weight



VIBRATORY FEEDERS  
Up to Hundreds of Tons per  
Hour — Rheostat Control of Flow



"Automatic" BATCH WEIGHING  
Scale—Controlled Vibratory Feeders



VIBRATING GRIZZLIES  
Both Feed and Scalp  
With One Unit



LONG "Vibratory" CONVEYORS  
No Motors, Gears or Other  
Mechanical Wearing Parts



VIBRATING SCREENS  
Wet or Dry — Single or  
Multiple Decks

Write for descriptive literature.

## SYNTRON CO.

110 Lexington

Homer City, Pa.

When inquiring check CP 6905 on handy form, pgs. 2-3

WHERE CAN YOU USE IT?

## This ROCKWELL Automatic Butterfly VALVE

This 30" cast steel valve, built for 65 p.s.i.g. as a suction valve to ejectors handling saturated air, is equipped with a hydraulic cylinder, pilot valve and connecting arms actuated by a pneumatic positioner. Valve slide position is indicated by Selsyn motor units operated by remote control, with signal switches to indicate full open and full closed position. A declutchable hand-wheel for emergency manual operation is also provided. This is but one of many types of Rockwell automatic valves available up to 84" pipe size.

Whether for controlling air or gases at high or low temperatures or pressures, process fluids or granular solids, there's a Rockwell slide or butterfly valve of any metal, any size, with any desired control mechanism to meet your specific needs. Get our catalog.

ROCKWELL VALVES FOR AIR • GAS • LIQUIDS • SOLIDS



Slide



Kwikleen



Butterfly



Wafer



Automatic Butterfly

W. S. ROCKWELL COMPANY, 220 Eliot St., Fairfield, Conn.

When inquiring check CP 6906 on handy form, pgs. 2-3

## STABELAN E IN PASTE FORM

for VINYL PLASTISOLS • ORGANISOLS • EMULSIONS

AS WELL AS REGULAR VINYL MILLED AND CALENDERED FILMS . . . A BETTER STABILIZER FOR HIGH TEMPERATURES, ULTRA-VIOLET AND OUTDOOR AGING . . .

Here is a newly developed stabilizer in paste form for high temperatures, ultra-violet and outdoor aging that improves other properties in vinyl films as well . . . It gives excellent light fastness, improves the transparency of clear films and gives films that do not absorb water and do not "blush" . . . It is compatible with all tested pigments — even organic reds hold their hue and age well when used with it.

Write for complete data



HARWICK STANDARD CHEMICAL CO..

AKRON 5, OHIO

BRANCHES: BOSTON, TRENTON, CHICAGO, LOS ANGELES

When inquiring check CP 6907 on handy form, pgs. 2-3

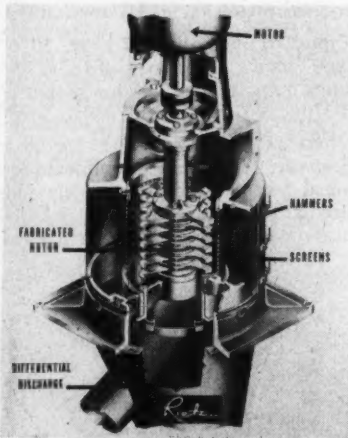
## PROCESSING EQUIPMENT

**Disintegrator's dual-type discharge eliminates clogging . . .**

also avoids loss of power due to excessive recycling

**Uses:** Dual-discharge disintegrators for separating and eliminating waste or resistant material in many processes concurrent with production of the principal product.

**Features:** Dual-discharge feature eliminates clogging and loss of power



Dual-discharge disintegrator

through excessive recycling. As a result, small power units are often possible. Lower operating costs and higher through-put are reported.

**Description:** Disintegrator is of vertical design. Undesirable material is gravity-ejected. Five models.

**Source:** Rietz Manufacturing Company, Dept. CP, San Francisco 5, Calif. . . . or for more information check CP 6908 on handy form, pages 2 and 3.

**1700 to 2600° F furnace fills high-temperature research needs . . .**

electric muffle-type unit heats rapidly from room temp.

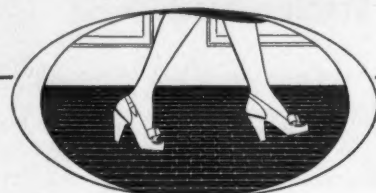
**Uses:** 1700 to 2600° F. electric muffle furnace for laboratory research.

**Features:** Rapid heating from room temperature and low heat-loss. Externally-prepared atmospheres may be used without affecting element-life.

Manual control, provided by tap-changing transformer in furnace base, prolongs element-life.

**Description:** Standard equipment includes ammeter and indicating pyrometer with noble metal thermocouple. Inside dimensions, 4-1/4" wide, 3" high, 7" long. Electrical rating, 3500 watts.

## THE SAFE OPEN STEEL FLOORING IS TRI-LOK



No object over 1/2 square inch can pass through super-safe U-Type Tri-Lok Flooring. Fabricated without bolts, rivets or welds it is unsurpassed for plant installation, walkways, loading platforms. Efficient distribution of concentrated loads . . . maximum free opening for light and air. Ask for Bulletin KA1140.

### DRAVO CORPORATION

National Distributor for the Tri-Lok Company

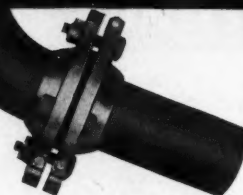
Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives in Principal Cities



When inquiring check CP 6909 on handy form, pgs. 2-3

Quick Installation...  
Low Maintenance...  
Long Service Life



"KEMITE" DUCT  
OR  
"GOODITE" PIPE  
WITH  
"FLANG-LOK" FLANGES

The most practical and economical combination for the installation of permanent lines or for unloading tank cars, tanks, vats, etc. Fewer intermediate connections; extreme flexibility right up to the flange; smaller openings through floors or walls; full-capacity flow.

"KEMITE" DUCT has extreme flexibility; a tube that is highly resistant to abrasive wear and the permeation of liquids or gases; and a carcass that will not kink or collapse. Sizes 3/4" to 4", inclusive.

"GOODITE" PIPE has same characteristics but is made in larger sizes — up to 12" — and is available for both suction and discharge.

"FLANG-LOK" FLANGES. Designed to simplify installation of "KEMITE" and "GOODITE". Shaped to accommodate "Flang-Lok" ends of both and to assure a positive, non-metallic seal when tightened. Bolt holes aligned by turning flange only. Furnished in steel or cast iron. Contact our nearest branch for details and prices.



### GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • Detroit • St. Paul • Los Angeles • San Francisco • Seattle • Portland • Salt Lake City • Denver • Houston • Distribution in Other Principal Cities

Est. 1870

When inquiring check CP 6910 on handy form, pgs. 2-3



## *Federated first for Lead Products*

**Asarco Sheet Lead...** All commercial weights and sizes. Chemical...Tellurium Chemical...Antimonial.

**Asarco Lead Pipe...** All commercial sizes. Special sizes on request. Chemical...Tellurium Chemical...Antimonial.

**Asarco Lead and Lead Lined Valves**  
... Split Type "Y" and "Angle", Standard "Y", Gate, Check, Hard Lead "Y", Plug and Seat.

**Asarco Lead Fittings...** Elbows, Crosses, Tees, "Y's", (with plain ends, with flanges on, or for flanging in the field). Chemical and Antimonial.

**Asarco Lead Wool...** 5/8" rope in 50 lb. waterproof bags.

**Asarco Lead Specialties...** Extrusions and Castings to specification.

See Federated also for Lead Lined Pipe  
Lead Lined Fittings, Lead Lined Flanges

**Federated Metals Division**

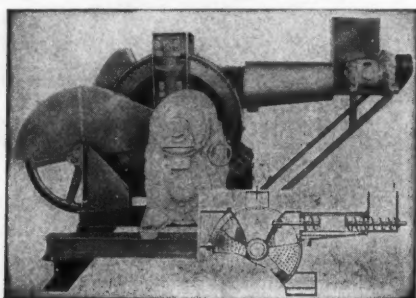
AMERICAN SMELTING AND REFINING COMPANY,  
120 BROADWAY, NEW YORK 5, N. Y.



When inquiring check CP 6911 on handy form, pgs. 2-3

## DEWATERING PRESS

*Continuous Type*



### MOST EFFICIENT METHOD OF EXTRACTING BULK

WATER FROM SEMI-SOLIDS FOR  
PROFITS IN BY-PRODUCTS AND FISH  
MEAL DEHYDRATING OPERATIONS

LOW POWER consumption • ALL STEEL • Conserves weight and space • The press is designed to dewater any material with free moisture that is fibrous enough to pack. Some of the products successfully pressed are: Tomato pomace, Citrus peel, Potatoes, Beet pulp, Cherries, Corn fiber, Fish and fish wastes, Brewers and distillers grains, Paper pulp, and Cannery wastes.

Literature Available

Manufacturers of Air Lift Driers •  
Reduction Equipment from "Bin  
to Sack" • Hammer Mills • Cook-  
ers • Exhaust Boxes, Etc.



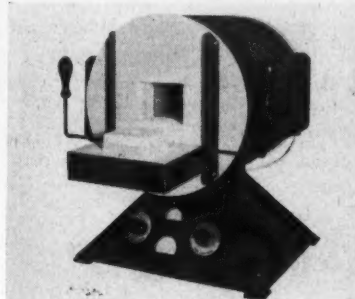
**P & L WELDING &  
MACHINE WORKS**

519 East LaPalma St., Anaheim, Calif. Phone: Anaheim 4311

## PROCESSING EQUIPMENT

For AC only, 115v, 60 cycles, or  
230v, 60 cycles. Employs ceramic  
muffle and Globar heating elements.

Source: Hevi Duty Electric Com-



Electric muffle furnace

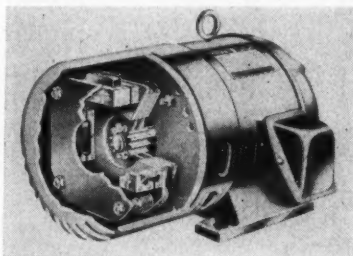
pany, Laboratory Furnace Div., Dept.  
CP, Milwaukee 1, Wis. . . . or for  
more information check CP 6913 on  
handy form, pages 2 and 3.

**Control hoists, molding  
presses, machine tools  
with "brakemotor" . . .**

smooth braking, easy, adjustment  
of braking load

**Uses:** As magnetic disc brake and  
motor, designed to operate on a single  
shaft and in a single housing and  
providing start and stop service on  
cranes, hoists, automatic bottling  
equipment, high speed molding  
presses and machine tools.

**Features:** Brake cover is stream-  
lined and easily removable.



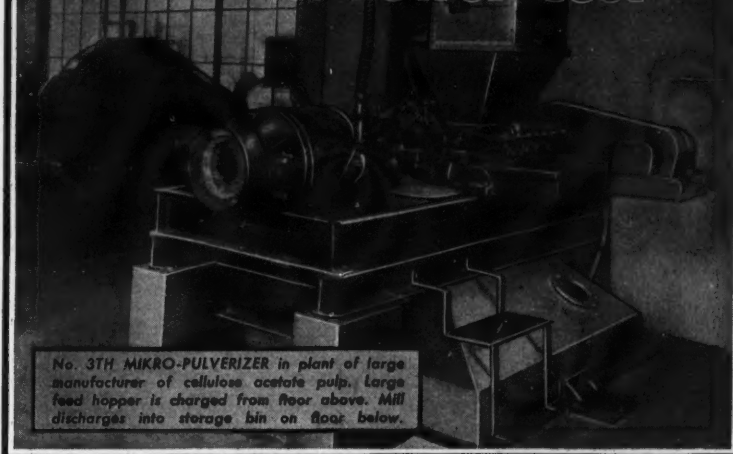
Brakemotor for start, stop service

**Description:** Braking discs are  
mounted close to motor with a short-  
er shaft to minimize strain and wear  
on shaft and bearings. Magnets are  
located away from the motor for max-  
imum heat dissipation. Tension  
springs are located on main brake  
studs for easy adjustment when in-  
quired.

**Source:** Star Electric Motor Co.,  
Dept. CP, Bloomfield, N. J. . . . or for  
more information check CP 6914 on  
handy form, pages 2 and 3.

**WHEREVER YOU FIND A MIKRO  
There You Will Find ---**

**A Better Product  
In Greater Volume  
At Lower Cost**



No. 3TH MIKRO-PULVERIZER in plant of large  
manufacturer of cellulose acetate pulp. Large  
feed hopper is charged from floor above. Mill  
discharges into storage bin on floor below.

Let us show you how others have  
effected economies and improved  
their finished product through the use  
of MIKRO grinding and dust collecting  
equipment specially designed for  
the Chemical Processing Industry.

you. There is no charge for this service  
which is based upon thousands of  
tests and performance records.

**MIKRO-PULVERIZERS** in six sizes  
**MIKRO-ATOMIZERS** in three sizes  
**MIKRO-COLLECTORS**  
in single or multiple-bag units

### THE MIKRO PLAN FOR PROCESSING EFFICIENCY

If you have a pulverizing or dust  
control problem, our engineers will  
study it, telling you what our equip-  
ment and the MIKRO-Plan can do for

WRITE TODAY—for our new, illus-  
trated catalog and information re-  
garding our uncharged-for laboratory  
service to help you solve your pul-  
verizing and dust collection problems.

**PULVERIZING MACHINERY COMPANY**  
60 Chatham Road Summit, New Jersey

**MIKRO-PULVERIZER**  
**-ATOMIZER**

Reg. U. S. Pat. Off.

Also Makers of the MIKRO-COLLECTOR

**PRESERVE OUR HERITAGE: FAITH, FREEDOM AND INCENTIVE**

When inquiring check CP 6915 on handy form, pgs. 2-3

## for DEPENDABILITY



they  
specified  
**LABOUR**

Here's a No. 10 LaBour Type G at work in a Chem-co contact sulphuric acid system. The owners of this plant wanted dependability—freedom from costly process interruptions due to pump failures—and they got it when a LaBour was specified for the job.

LaBour Type G is the packingless, self-priming centrifugal pump that has revolutionized old concepts of pump maintenance. Since it has no packing gland, it never needs attention for tightening or repacking. There are no rubbing or wearing parts anywhere in this pump, and aside from occasional lubrication of the bearings there's nothing to do to keep it working properly. That's minimum maintenance at minimum trouble and expense.

If you aren't already familiar with the overall economy and process efficiency which a LaBour Type G can deliver, we urge you to write for full details. If you'll tell us the facts about the particular job you have in mind, we can give you specific information that may be of great value to you.



ORIGINAL MANUFACTURERS OF THE SELF-PRIMING CENTRIFUGAL PUMP

# LABOUR

THE LABOUR COMPANY, INC. • Elkhart, Indiana, U.S.A.

When inquiring check CP 6916 on handy form, pgs. 2-3

Page 100

## PROCESSING EQUIPMENT

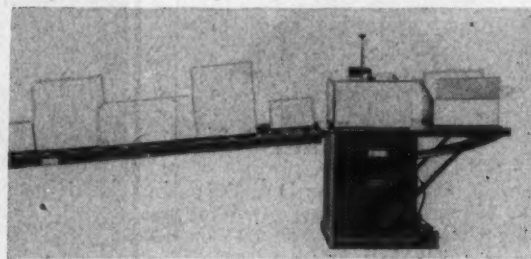
**Change in case size doesn't call for adjustment of case sealer . . .**

semi-automatic unit handles 1-5 different size cases per minute, one right after another

**Uses:** Sealing cases of different widths, heights and lengths, semi-automatically.

**Features:** Different size cases can be sealed one right after the other; no adjustment is necessary.

**Description:** One operator is used. He packs case on packing table, applies glue, pushes case into com-



Cases on conveyor indicate range of sizes that semi-automatic sealer will handle, one after another

pression section, and trips foot pedal to apply compression. With such a procedure, 1 to 5 cases can be sealed per minute.

Light-weight unit may be moved from place to place. Overall dimensions: 45" high, 27" wide, 41" long.

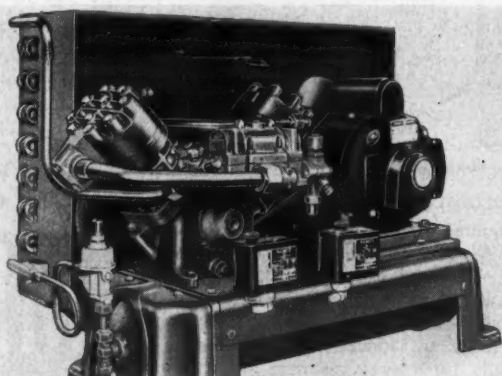
**Source:** The Sealall is a development of A-B-C Packaging Machine Corporation, Dept. CP, 220 Hampshire St., Quincy, Ill. . . or for more information check CP 6917 on handy form, pages 2 and 3.

**Evaporators defrost quickly with instant, automatic return to freezing . . .**

defrost units can be used with any evaporator; operate when efficiency drops to certain point

**Uses:** Defrost evaporators automatically whenever efficiency drops to predetermined point.

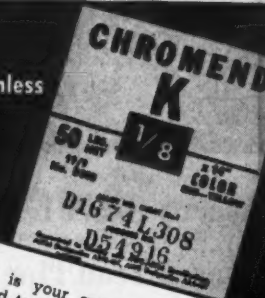
**Features:** Defrosting is extremely rapid and return to freezing is instantaneous, automatic. Unit is simple in operation and provides unlimited heat for defrost.



Unit rapidly defrosts evaporators

**Description:** Automatic high-side defrost units can be used with any evaporator. Units are based on principle of pressure-temperature relationship. Low and high pressure control, both reverse acting, are utilized to start the defrost

This Record  
Safeguards Your Stainless  
and High Tensile  
Welding Jobs



The Arcos label is your assurance of uniformity from pound to pound and shipment to shipment. Careful manufacturing controls and records of Arcos stainless and high tensile steel electrodes are the reason. The alloy heat number and process number stamped on every label permit you to match exactly any previous order at any time. Get the Arcos "Reference Chart on Alloy Welding" from your distributor or write direct.

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ARCOS CORPORATION

Philadelphia 43, Penna.

WELD  
WITH

# ARCOS

When inquiring check CP 6918 on handy form, pgs. 23

## Smooth, Vibrationless PROPELLERS

FOR

### MIXING STIRRING AERATING AGITATION PUMPING

For replacement or original equipment. Perfectly balanced to avoid whip and strain on equipment. Wide range of sizes and metals. Consultative engineering service available.

WRITE FOR NEW 1950 data folder including  
SUBSTANTIALLY REDUCED PRICES

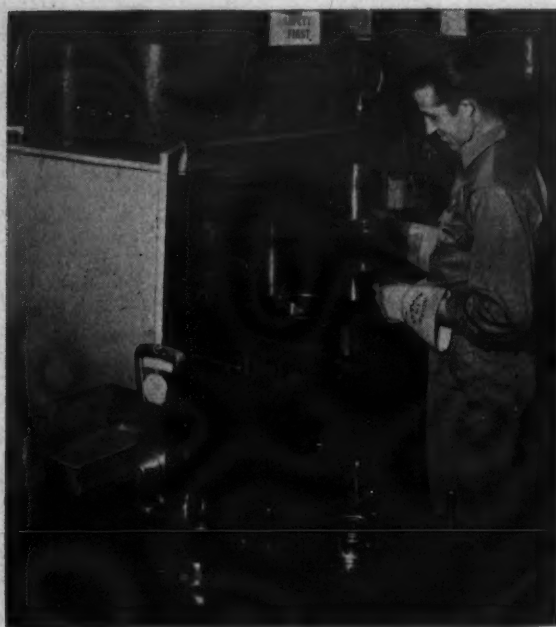
MICHIGAN WHEEL CO.  
GRAND RAPIDS 3, MICH.

When inquiring check CP 6919 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Page 101



## What Cuts Packaging Costs . . . .

Packaging costs are cut by (1) good layout designed and built to fit the individual product (2) Accuracy, or how much is in the package, plus or minus (3) speed of operation, whether the operation be automatic, semi-automatic or hand checkweighing (4) durability of equipment which is important from the standpoint of mounting labor costs due to equipment failure which in turn slows operations all along the line. All of these cost cutting factors have entered into EXACT WEIGHT scale engineering and manufacture for years . . . have made these famous scales preferred equipment in a great many industrial and packaging operations nationally. For accurate weights and uniformity settle one equipment problem by writing for details on EXACT WEIGHT Scales to fit your job.

EXACT WEIGHT Sacking Scale Model No. 2224—Features pedestal mounting for more room for bag handling; revolving dial visible from any working angle; dust exclusion dashpot for trouble-free operation; new lock-jaw bagholder—Capacity to 150 lbs.



**EXACT WEIGHT SCALES**  
*Industrial Precision*  
**THE EXACT WEIGHT SCALE COMPANY**

31 W. Fifth Ave., Columbus 8, Ohio  
2920 Bloor St., W, Toronto 18, Canada

When inquiring check CP 6923 on handy form, pgs. 2-3

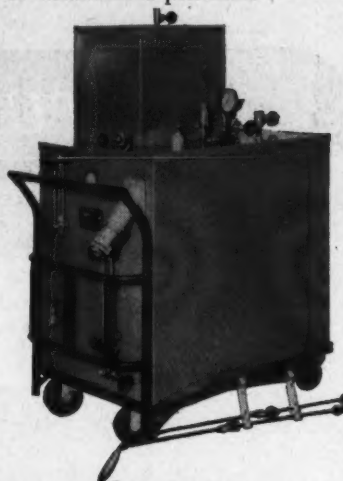
## PROCESSING EQUIPMENT

### Dry steam and detergent, jet-mixed, scour and sterilize plant or equipment . . .

solid metal electrodes generate steam in boiler of silent, mobile unit; jet is fingertip-controlled

**Uses:** Mobile steam-detergent cleaning unit for sanitary, effective scouring of mixers, other equipment.

For sterilizing refrigerators, washrooms and fixtures, and cleaning walls, floors, windows, lighting fixtures and inaccessible, out-of-reach areas. For safe, silent operation in plants during regular working hours, without annoyance or discomfort to personnel.



Steam-detergent cleaning unit

**Description:** Speedylectric JC-30 Steam-Jet Cleaner weighs about 500 lbs and is mounted on all-steel dolly with ball bearing rubber-tired swivel casters. Standard equipment includes high-pressure steam and detergent hose, nozzle and controls.

Operating on AC current, 220v or more, single or poly-phase, it occupies 27 x 48" floor space. Boiler capacity, 30 kw. ASME Code National Board Stamped and listed by Underwriters Laboratories.

**Source:** Livingstone Engineering Company, Dept. CP, 100 Grove St., Worcester, Mass. . . . or for more information check CP 6924 on handy form, pages 2 and 3.

### Portable tool removes heads from 10 to 55-gal drums ala can opener . . .

bites into 20-gauge steel, flattening sharp edges; includes two extra cutter-heads

**Uses:** Portable cutter for users removing up to 200 heads daily from loaded or empty drums of 10 to 55-gal capacity and 20 to 16-gauge stock. For shop, yard, dock or warehouse. Can be safely used on drums containing hazardous fumes or vapor, manufacturer reports.

Optional accessories include 1) a roller-wheel for sealing leaky chimes, and 2) a chime straightener.

**Features:** Portable, and light enough to handle easily, eliminating need for hauling drums to machine. Cuts "about 1000 heads" before dulling. Leaves no saw-tooth edges to tear or infect. No noisy pounding or glancing hammers.

**Description:** Metal rim is flanged slightly inward while

**Features:** Utilizes dry, high-pressure steam which is generated in the boiler by solid metal electrodes. Contains no motors, pumps or moving parts, no coils or tubes; hence, maintenance is kept at minimum. No flame, fumes or excess water. Specially designed jet, with fingertip control, simplifies mixing high-pressure steam with solvent or detergent in any desired proportion and directing it where desired.

## International

**BALL MILLS**

**RIBBON MIXERS**  
BELT OR MOTOR DRIVEN

**PORTABLE MIXERS**  
MEDIUM and HEAVY DUTY  
Mixers designed and many different types, direct drive, gear motor, slow speed.

**PERMANENT MIXERS**  
With or without Tanks—Top or Side Entrance—Sieves of the propeller or turbine type.

*Send for New Catalogs Now Ready*

**INTERNATIONAL ENGINEERING, INC.**  
NEW YORK 15 East 57th St. DAYTON 1, OHIO CHICAGO 407 S. Dearborn St.  
LOS ANGELES 150 N. Norton Ave. Fairbairn, Minn. 55

When inquiring check CP 6925 on handy form, pgs. 2-3

### for GREATEST DEPENDABILITY and EFFICIENCY in metered pressure pumping of **SULPHURIC ACID** . . . at all concentrations

Pumps against line pressure . . . meters accurately . . . has no stuffing box, so eliminates leakage, prevents corrosion of pump or contamination of product, avoids loss of prime . . . lowest maintenance . . . Hundreds of satisfactory installations.

- NO STUFFING BOX OR RUNNING SEAL
- POSITIVE DISPLACEMENT PISTON MEASUREMENT
- FLOW RATE ADJUSTABLE WHILE IN OPERATION
- MANUAL OR AUTOMATIC CONTROL

**Lapp**

**PULSAFEEDER**

PISTON DIAPHRAGM CHEMICAL PROPORTIONING PUMP  
WRITE for Bulletin 262 with complete description and specifications.  
LAPP INSULATOR CO., INC., PROCESS EQUIPMENT DIVISION, 226 MAPLE STREET, LE ROY, N.Y.

When inquiring check CP 6926 on handy form, pgs. 2-3

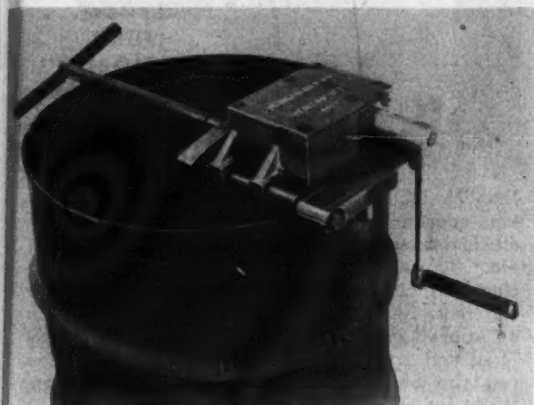
CHEMICAL PROCESSING



## PROCESSING EQUIPMENT

cutting circle. After cutting, head drops into drum, while cutter rests across open drum. When dull, tool can be resharpened on a good emery wheel or mailed to manufacturer for regrinding. Complete unit includes three cutting-wheels, or two cutting-wheels and one roller-wheel for sealing leaky chimneys.

Light-weight metals are used in transmission case, cross-



Portable head-opener for steel drums

bars and crank. Slide-bars, rollers and adjusting screw are steel. Cutter is mounted on heavy countershaft supported by two large Timken roller bearings. Bronze gear mated with steel worm.

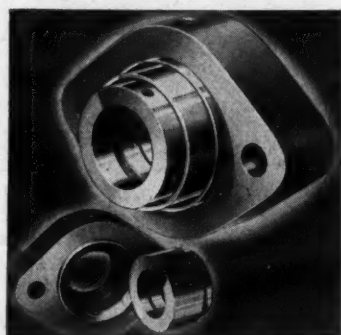
Source: Michael A. Schinker Mfg. Co., Dept. CP, 6514 S. Western Ave., Chicago 36, Ill. . . or for more information check CP 6927 on handy form, pages 2 and 3.

### Avoid excessive face wear on seals handling crude oils under pressure . . .

used in centrifugal pumps, other units which must withstand up to 600 psi and 250°F

Uses: For meeting extraordinary sealing requirements of equipment handling hydrocarbons under high pressures.

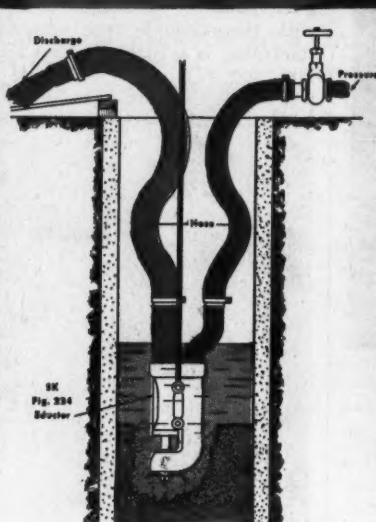
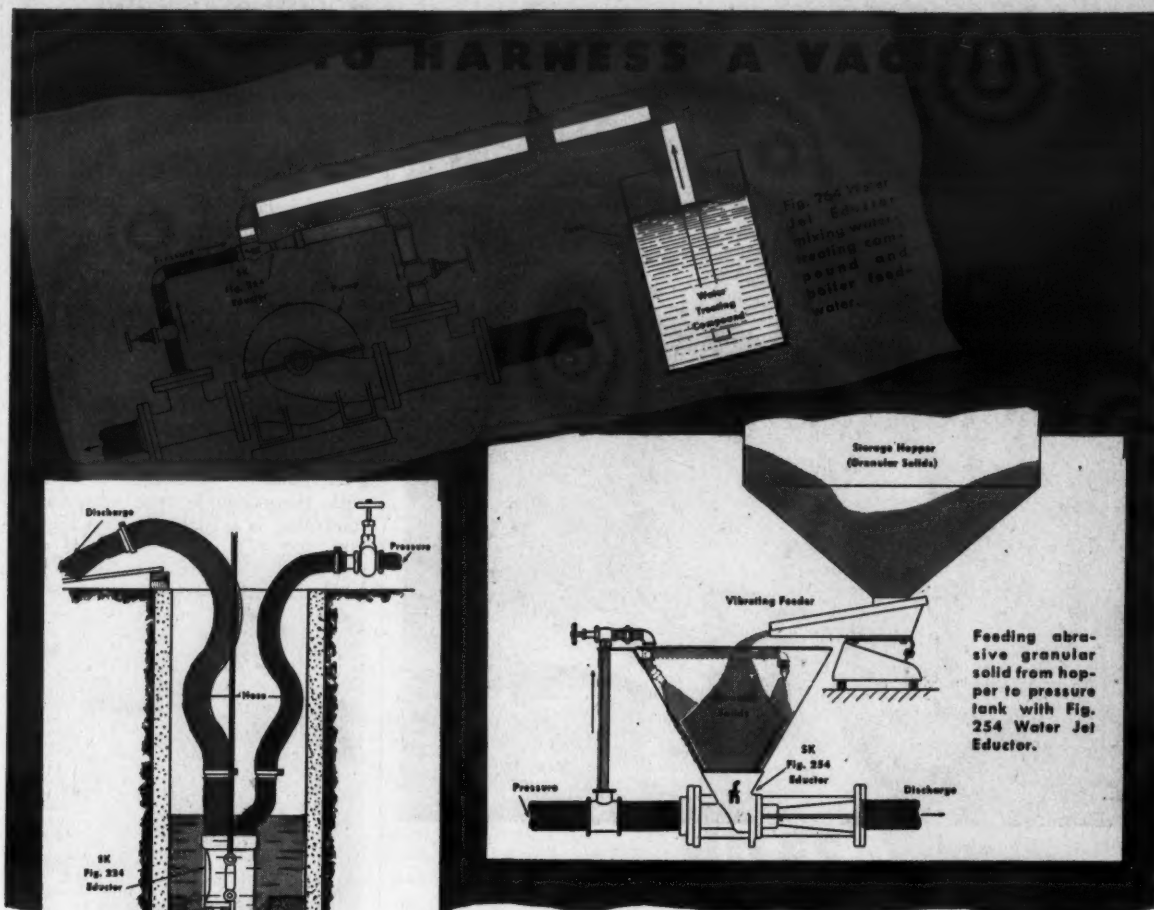
Features: Improved control and balance of hydraulic pressures eliminate problem of excessive sealing-face wear. Also, reduction in the number of parts susceptible to wear and deterioration minimizes maintenance. Need for auxiliary cooling system is eliminated by a simplified cooling method.



Seals withstand pressures up to 600 psi

Description: Seals are designed to handle variety of liquids at pressures up to 600 psi and temperatures up to 250°F in centrifugal pumps and other equipment. Comprehensive data sheet is available on request.

Source: Felt Products Mfg. Co., Packing Div., Dept. CP, 1508 Carroll Ave., Chicago 7, Ill. . . or for more information check CP 6928 on handy form, pages 2 and 3.



Clearing sludge out of tank with portable Fig. 224 Mud Eductor.



New Bulletin 2-M describes all types of Water Jet Eductors, with specifications and applications. Write today for your copy.

WE'VE been doing just that for years, with SK Water Jet Eductors. A versatile pump and mixer for all types of fluids, the SK Water Jet Eductor derives its power from partial vacuum. Vacuum, formed in the suction chamber of the Eductor, is created by the action of the pressure liquid.

Putting that vacuum to work for you—at a saving—is our business.

The three examples above show how SK Water Jet Eductors are making tough jobs easier in a variety of industries. Since Eductors have no moving parts, maintenance and operating costs are extremely low. And their reliability makes SK Water Jet Eductors ideal for minimum supervision in hard-to-reach installations.

SK engineering can tailor a standard or special Water Jet Eductor to your problem. Mixing, blending and pumping of liquids, gases, slurries or solids—creating vacuum or pressure—are all within our scope. And SK manufacturing can provide a Water Jet Eductor in the size and material you require.

New Bulletin 2-M describes SK Water Jet Eductors, from specifications to applications. Write today for your free copy, or for SK engineering assistance on special problems.



## SCHUTTE and KOERTING Company

Manufacturing Engineers

1173 THOMPSON STREET • PHILADELPHIA 22, PA.

JET APPARATUS • HEAT TRANSFER EQUIPMENT • STRAINERS • CONDENSERS AND VACUUM PUMPS • OIL BURNING EQUIPMENT • ROTAMETERS • FLOW INDICATORS • RADIATION TUBES • VALVES • SPRAY NOZZLES AND ATOMIZERS • GEAR PUMPS • DESUPERHEATERS

When inquiring check CP 6929 on handy form, pgs. 2-3



## The hotter the problem . . . the more Vycor Brand glassware saves

Of all the glasses produced by Corning, VYCOR brand glasses are tops for high temperature work. It's to your advantage to use them wherever practical because they will save you money.

For example, VYCOR trays are used in calcining certain chemicals, a very severe service. In one particular instance, with temperatures approaching 1200°C, VYCOR trays outlasted another silicious material 4 to 1! Contamination has been eliminated completely.

In addition, it is remarkably inert to acids, mild alkalis, water and steam at a wide range of temperatures. Particularly hard, it resists pitting and scratching. It's like fused silica in properties and performance.

Engineered to your needs, VYCOR brand glasses can be fabricated into plant equipment through the use of cylinders, tubing, rods or plates. Send for Bulletin EB-1 which shows you how VYCOR brand glasses are being used to cut costs.

CORNING GLASS WORKS



CORNING, N. Y.

*Corning means research in Glass*

Technical Products Division: { Glass Pipe, Laboratory Glassware, Plant Equipment, Lightingware, Signalware, Gauge Glasses, Optical Glass, Glass Components

When inquiring check CP 6930 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

### Heat treat small parts in batch lots in pit type furnace . . .

basket loading method efficient,  
speedy, saves space

**Uses:** For heat treating small batches of metal parts. Designed for drawing, tempering and normalizing to 1200°F.

**Features:** Basket loading offers advantages of efficiency, speed and space economy. Furnace is heated by easily removed Nichrome electric heating coils completely surrounding the alloy steel basket which rests on an alloy grid plate.

**Description:** Furnace, complete with thermocouple type temperature controller, is available in capacities of 200, 300, 600 and 1500 lbs of steel per hour. Heating chamber is well insulated with a 4 1/2" layer of refrac-



Recirculating type pit furnace

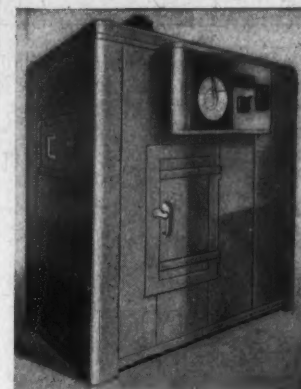
tory insulating brick overlaid with 2 1/2" firebrick.

Fan mounting in the floor is protected by additional insulation packing. Insulated furnace cover makes a tight seal while furnace is in operation, but may be easily lifted and swung away from the furnace during loading and unloading.

Furnace is set on 21 3/4" legs to give access to motor drive in the pit. Basket is 30" diameter and 32" deep with solid 18-8 stainless steel sides and a cast grid bottom overlaid with heavy mesh screen. Basket is equipped with 2 lifting lugs and is carefully guided into place in the furnace by 6 alloy structural members.

This prevents any damage to the heating elements.

**Source:** Electric Recirculating Air Type Pit Furnace is built by W. S. Rockwell Co., Dept. CP, 200 Eliot St., Fairfield, Conn. . . . or for more information check CP 6931 on handy form, pages 2 and 3.



*Important  
Savings  
Assured...  
WITH A  
"NATIONAL"  
CONVECTION TYPE  
TEST DRYER*

The "NATIONAL" Test Dryer provides an accurate, economical means of establishing the most efficient operating speed, air velocity, temperature, etc., before using major equipment for drying chemicals, ceramics, food products and many other materials. Any hypothetical drying condition can be applied in miniature scale, thus avoiding costly "trial and error" in full-size dryers. The machine can also be used for small quantity production. Write for complete information.

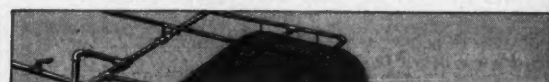
Chemical Dryers of  
All Types and Sizes



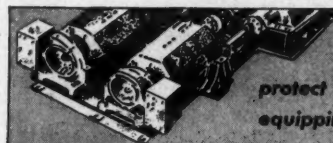
Special Drying and  
Heating Equipment

THE NATIONAL DRYING MACHINERY CO.  
2709 N. Hancock Street, Philadelphia 33, Pa.

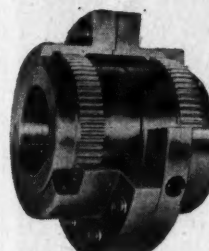
When inquiring check CP 6932 on handy form, pgs. 2-3



## Are You Exposing Costly Machines To Serious Damage?



protect your investment by  
equipping with dependable



**WALDRON**  
*the advanced  
gear type*  
**Coupling**

Its exclusive construction and operating advantages recommend this modern design coupling as the best protection for your sizable investment in expensive connected machines. Our Catalog 57 explains its safety factors. Copy on request.

Manufactured By

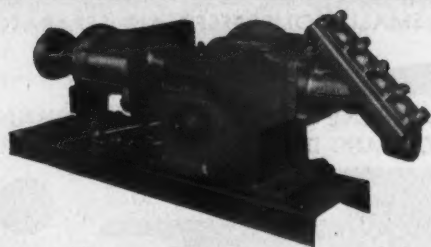
**JOHN WALDRON CORPORATION**  
New Brunswick, New Jersey  
Sales Representatives in Principal Cities.

When inquiring check CP 6933 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## MILTON Roy PUMPS



### New! "aiROYmetric" CONTROLLED VOLUME CHEMICAL PUMPS

These are positive displacement, precision metering units, with the exclusive Milton Roy double-ball check liquid ends, powered by simple air cylinders. Plunger stroke length (capacity) is adjustable while operating by means of screw and hand-wheel. Capacities from 0.4 to 405 GPH. Pressures to 20,000 psi. Plunger diameters from  $\frac{1}{8}$ " to  $3\frac{1}{8}$ ". For controlled volume pumping... practically all chemicals, slurries, solids in suspension etc. Sanitary liquid ends are available. Ideal units for automatic feed systems. Write for Bulletin 250.

## MILTON Roy COMPANY

1310 E. MERMAID LANE, CHESTNUT HILL, PHILA. 18 PA.

When inquiring check CP 6934 on handy form, pgs. 2-3

## PIPE MARKERS



anyone  
can use—  
everyone  
can read

**QUICK-LABEL** Pipe Markers conform to American Standards Association Pipe Identification System. QUICK-LABELS come on handy cards... stick without moistening. Names of materials printed in large black letters in correct ASA background colors. CAN BE READ UP TO 75 FEET. Markers for over 140 materials, including all materials listed in ASA Standard A13, available on Brady Stock Cards. Specials made to your order. QUICK-LABEL Pipe Markers are Silicone Plastic coated to resist dirt, grease, fumes, moisture... indoors or out. Replace slow and costly painting and hand stenciling. Exclusive Starter-Strip automatically releases part of label for fast peeling. QUICK-LABELS mark your pipes so that anyone who can read will know what's in them. **QUICK-LABELS leave no room for doubt... or tragedy.** Write for useful literature and FREE SAMPLES today.

**FREE  
SAMPLES**

**W. H. BRADY COMPANY** Established 1914

Manufacturers of Self-Sticking Tape Products  
Chippewa Falls 10, Wis. • Distributors in 125 Cities

When inquiring check CP 6935 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

### Accurate, efficient heating of process kettle at temps to 650° F...

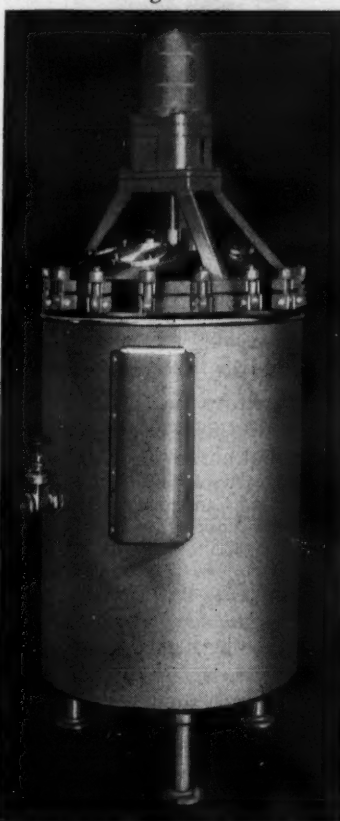
evacuated, sealed Dowtherm vaporizer permits vapor heating below heat transfer medium's normal b. p.

**Uses:** For process heating, mixing, under pressure or vacuum, at temps to 650° F.

**Features:** Vapor-generating chamber is charged with correct amount of Dowtherm at the factory, then evacuated and hermetically sealed. Advantages of vapor-phase heating, with excellent control of heat, are available from temps below atmospheric boiling point of Dowtherm, up to 650° F.

**Description:** Electrically-heated and gas-fired models are available in 5 sizes, with capacities from 60 to 500 gallons. Units are completely self-contained, requiring only connection to electric outlets or gas lines.

Processing kettle is built into upper half of unit. Covers for 60 and 100 gallon sizes are normally attached by swing



High-temp kettle is ready-to-operate unit

slow speed yoke type shaped to contour of kettle.

Tangent-type drain pipe allows complete drainage. Design prevents overheating of drain pipe.

Located below kettle is leg-type gas combustion chamber or strip-heater chamber. Heat is applied to Dowtherm from vertical surfaces only, thus assuring maximum service life from the heat transfer medium.

**Source:** Groen Mfg. Co., Dept. CP., 4539 W. Armitage Ave., Chicago 39, Ill. . . . or for more information check CP 6936 on handy form, pages 2 and 3.

bolts; larger units have covers welded directly to kettle and are provided with manhole. Standard fittings in cover are handhole, manhole, sight and light glasses, flanged condenser opening, fill pipe, control bulb well, cooler baffles and inert-gas opening.

Two adjustable, hollow, mixing-cooling baffles extend into kettle from cover. Pitch is adjustable through seal in cover. Baffles have water inlet and overflow connections, have max cooling capacity of 25,000 Btu/sq. ft.

Totally-enclosed vertical motor is mounted directly on gear housing. Agitator can be either turbine-type, operating at 100-200 rpm, or



## NILES

### Lacquer-lined steel drums also offer you ECONOMY

The great strength, long life and economy of steel plus the chemical neutrality of NILES durable finish, lacquer lining provide a combination in drums that means *maximum efficiency*! NILES lacquer linings are proof against chemical reactions of a wide range of materials. Where better, more economical storage and shipping is needed... turn to NILES for the solution.

NILES lacquer-lined steel drums are available with tight head or removable head. ALL Niles drums provide a liquid-tight seal indefinitely. It will pay to investigate their money-saving potentials for you. Write for details to—

**NILES STEEL PRODUCTS DIVISION  
REPUBLIC STEEL CORPORATION  
NILES, OHIO**

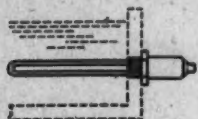
## NILES

METAL BARRELS AND DRUMS

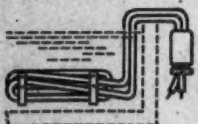


When inquiring check CP 6937 on handy form, pgs. 2-3

## LOW-COST, EFFICIENT liquid heating with G-E Calrod® Heaters



G-E Calrod heaters are available in a wide range of sizes, shapes, ratings and sheath materials for "screw-in"...



or "over-the-side" installation. Thermostatic control will assure you of accurate temperatures and minimum power consumption.

Water, oils, plating baths, degreasing solutions and many other liquids do a more efficient job when accurately heated. And one of the fastest, most accurate and efficient methods of heating liquids is with G-E Calrod immersion heaters... by putting the heater right in the liquid for maximum heat transfer with minimum heat losses!

**FREE BULLETINS, GEC-1005A-** "Electric Heaters and Heating Devices" and GEA-5077, "Heating Liquids With Electric Heaters" will help you select and apply the heaters best suited to your jobs. Write to Apparatus Dept., Sec. 720-16, General Electric Co., Schenectady 5, N. Y. \*Reg. U. S. Pat. Off.

**GENERAL ELECTRIC**

When inquiring check CP 6938 on handy form, pgs. 2-3



**PLATECOIL**  
Replaces Pipe Coil

### LESS MAINTENANCE

Weights less than half as much as equivalent pipe coil. Platecoil is easy to handle. Installation can be made in ½ hour by one man and a helper.

### MORE PRODUCTIVE CAPACITY

Platecoil has more prime surface per sq. ft. of area than pipe coil, heats faster, and leaves more tank space for production work.

### NO LOSS OF SOLUTION

Platecoil can be removed from outside of tank in a matter of minutes without dumping. All connections above liquid level.

**PLATECOIL**  
KOLD HOLD MFG. CO.  
LANSING 4, MICHIGAN

Write Today For New  
Free Bulletin No. P34

When inquiring check CP 6939 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**Easily heat globe valves  
by steam coil to handle  
viscous corrosives...**

designed for shut-off and throttling services with corrosive fluids having no abrasive solids

**Uses:** Designed for shut-off and throttling service with corrosive fluids free from abrasive solids.

**Features:** Resistance to practically all corrosive chemicals including hydrochloric acid, dilute sulfuric acid, hydrofluoric acid and chlorinated compounds. Valve is also highly resistant to thermal shock.

**Description:** Valve is made in 1 and 2" sizes. Except for the Teflon packing, all valve parts in contact with the fluid are "Karbate" impervious graphite. Because of the excellent thermal conductivity of impervious graphite, the valve may be readily heated by steam coil of copper tubing wrapped around it. Highly viscous or saturated solutions may thus be easily controlled. Tapered disc valve seat assures accurate and close control of fluid flow, and is self-reseating. Valve is light and small, has short face-to-face dimensions and is self-lubricating.

**Source:** "Karbate" globe valves are made by National Carbon Co., Inc., Unit of Union Carbide & Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. . . or for more information check CP 6940 on handy form, pages 2 and 3.

**Stepless speeds up to 10:1  
ratios with fractional  
hp drives...**

speeds are non-fluctuating; drives are compact units

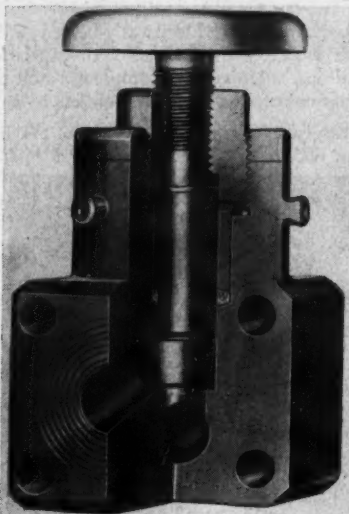
**Uses:** Variable speed, motor drives for applications requiring ¼ to ¾ horsepower, speed ratios to 10:1.

**Features:** Drives are compact, rigid, handwheel controlled, and totally enclosed. Speeds are stepless and non-fluctuating over entire speed range.

**Description:** Designated "1000 Series" Motodrives, hp sizes are ¼, 1/3, ½, and ¾. Ratios of stepless speed variation within 10:1 are available for each size. Horizontal assemblies are 9-5/8" in height; vertical are 16-7/8" in height.

Motors are 60 cycle, polyphase, 208, 220/440 or 550 volt, 1800 or 1200 rpm squirrel cage induction type. These are standard NEMA frame type F, face-mounted motors.

1000 Series is furnished with base for easy, adjustable installation, in either vertical or horizontal floor mounting.



Valve has tapered disc seat

## Murphy PARAGON "C" A SMALL COMPRESSED AIR SEPARATOR

**GUARANTEED**

**TO REMOVE THE LAST TRACE OF MOISTURE,  
OIL, AND DIRT FROM COMPRESSED AIR**

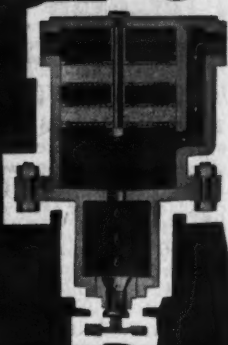
**AT POINT OF USE**

Installed just ahead of point of delivery, PARAGON "C" removes the last trace of pipe line condensation, scale, and grit, and delivers air, clean and dry, to immediate use.

Economical to buy and maintain, simple to install.

**FREE**

Our Bulletin P-A gives details of operation, construction, and prices. Ask for it today!



**JAS. A. MURPHY & CO.**  
501 NORTH FIFTH STREET, HAMILTON, OHIO  
Moisture Elimination Up To 3000 Pounds Per Square Inch

When inquiring check CP 6941 on handy form, pgs. 2-3



**suppresses dust from plastics**

Above is the Type "R" Hydro-Clone used to assure clean air in the plastics division of a large manufacturing plant. This Hydro-Clone is specified when space is at a premium and capacity not over 12,000 cfm is required.

Type "R" is of compact

design suitable for indoor installation. It reduces dust to harmless sludge... requires about 1 gal of water per 1,000 cu ft of air treated... fully described in Bulletin FY-127.

Write for full information about this and other models for every industrial need.

**WHITING CORPORATION**  
15667 Lathrop Ave.  
Harvey, Illinois

**FREE**  
New booklet of  
Practical Information on Dust  
Collection.  
Ask for Bulletin FY-142.

When inquiring check CP 6942 on handy form, pgs. 2-3

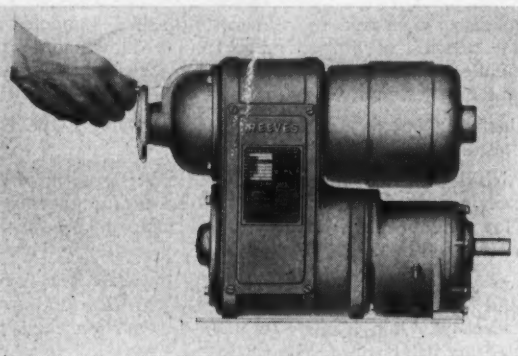
CHEMICAL PROCESSING



## PROCESSING EQUIPMENT

Horizontal assemblies can be wall mounted. Total of 24 different standard assembly combinations are available in each hp rating.

Tables for selecting correct Motodrive, as well as dimen-



Variable speed, fractional horsepower drive — vertical assembly

sional specifications are given in manufacturer's 8-page Bulletin No. M-4917.

Source: Reeves Pulley Company, Dept. CP, Columbus, O. . . or for more information check CP 6943 on handy form, pages 2 and 3.

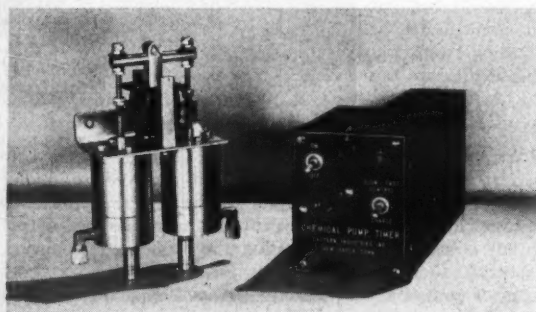
### Flow through metering pump remotely controlled by electronic timer . . .

electronically-controlled solenoid controls number of strokes per time-unit

Uses: Electronically-controlled metering pump for remote control applications.

Features: Operated by an electronically-controlled solenoid which provides accurate, variable control of number of strokes per unit time. Additional adjustment of stroke-length is available to maximum output of 0.8 cu in per stroke.

Conservatively-loaded components of electronic timer assure long life with relatively no upkeep or replacements. All working parts of pump are self-lubricated. Special mechanical sealing arrangement eliminates stuffing box adjustments and maintenance.



Electronically-controlled metering pump (dual type)

Description: Overall dimensions: pump is 6-1/2 x 4-1/2 x 2-5/8" deep; timer is approximately 9-3/4 x 4 x 5" high.

Source: Eastern Industries Inc., Dept. CP, 296 Elm St., New Haven 6, Conn. . . or for more information check CP 6944 on handy form, pages 2 and 3.

...FOR VALVE APPLICATIONS INVOLVING EXTREME PURITY  
OR CORROSION RESISTANCE...

# COMPARE PERFORMANCE and PRICE



## PERFORMANCE

Here is the famous Lapp solid-porcelain valve which has served spectacularly for many years in so many applications involving handling of corrosive chemicals—now reinforced for production security with a completely-enclosing shell of high-strength aluminum. Compare the table of prices for this equipment with that of lined valves, alloy valves, or any valves which will handle your difficult corrosion problems. On a straight dollar-and-cents basis, the Lapp Armored valve of solid porcelain is your best bargain in corrosion-resistant valves.

## PRICE

### LAPP ARMORED PORCELAIN "Y" VALVES

1" .....	\$68	3" .....	\$105
1 1/2" .....	74	4" .....	137
2" .....	79	6" .....	263

### LAPP ARMORED PORCELAIN ANGLE VALVES

1" .....	\$68	2" .....	\$79
----------	------	----------	------

### LAPP ARMORED PORCELAIN FLUSH VALVES

1 1/2" (for 3" tank outlet) .....	\$168
2" (for 4" tank outlet) .....	205
3" (for 5" tank outlet) .....	242

# Lapp

## PROCESS EQUIPMENT

CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS  
PULSAFEEDER CHEMICAL PROPORTIONING PUMPS

WRITE for complete information and specifications. Lapp Insulator Company, Inc. Process Equipment Division, 282 Maple St., LeRoy, N. Y.

When inquiring check CP 6945 on handy form, pgs. 2-3

# IF YOU USE PROCESS STEAM—

1. YOU CAN KEEP YOUR PROCESS EQUIPMENT OPERATING AT HIGH, UNIFORM TEMPERATURES.
2. YOU CAN SAVE AT LEAST 10% ON FUEL.
3. YOU CAN REDUCE DRYING TIME.
4. YOU CAN DRAIN CONDENSATE COMPLETELY FREE OF ENTRAINED AIR AND RETURN IT TO THE BOILER AT PRACTICALLY THE SAME TEMPERATURE AS WHEN IT LEFT.
5. NO PIPE CHANGES REQUIRED — other than connections into existing closed circuit.
6. NO GADGETS TO ADJUST OR CAUSE DELAY.
7. COMPLETELY AUTOMATIC IN OPERATION OVER ENTIRE PRODUCTION RANGE — from start up to and during full speed.

A 24 page book — Publication 3250 — will be of value to you in your steam process problems. Write for it today.

COCHRANE CORP., 3162 N. 17th St., Phila. 32, Pa.

**COCHRANE**  
**GB** SYSTEM OF  
CONDENSATE  
DRAINAGE  
CONTROL

When inquiring check CP 6946 on handy form, pgs. 2-3

Where **SAFETY** is  
important



Specify  
This Trap

**71 AIRXPEL STEAM TRAP**  
Steel Body and Cover

Approved by California State Department of Labor for use in petroleum refining plants. With increasing acceptance in chemical processing plants and for all types of marine service, this Wright-Austin steam trap provides an extra factor of safety in accordance with current insurance codes, for all plants using steam.

Send for Bul. 604 which gives complete data and prices.

**Wright-Austin Company**

3241 Wight Street — Detroit 7, Mich.  
Manufacturers of a complete line of Steam  
Traps, Steam Separators and Boiler Trimmings.

**WRIGHT-AUSTIN**



When inquiring check CP 6947 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**Grips pipe, cable or tools  
with constant pressures  
of 5 ozs to 18 lbs . . .**

coil-type clamp, in 11 sizes, has maximum openings varying from 3-1/4 to 20 inches

**Uses:** One-piece coil-form clamps, in 11 sizes, for many gripping applications, such as hangers for pipe or wire, guides for cable or cord, holders for tools. For use where clamping pressures of 5 ozs to 18 lbs are required, or maximum openings of 3-1/4 to 20".

**Features:** Constant clamping pressure regardless of thickness of article held. Automatic take-up. Flexibility in spotting clamping-pressures (can be used around a corner). Coil-form jaws.

**Description:** Kit No. NC-11 contains one each of 11 sizes. Width of metal band varies from 1/4 to 1-1/4", and coil diameters are 5/16 to 2". Clamp sizes are in systematic incremental steps, following ASA-preferred number series so that each succeeding size is approximately 50% huskier.

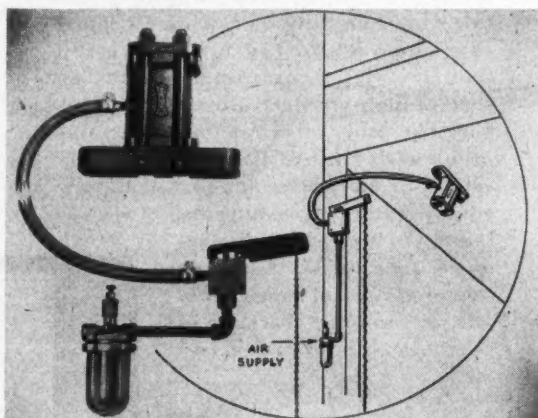
**Source:** Hunter Spring Company, Dept. CP, 1 Spring Ave., Lansdale, Pa. . . or for more information check CP 6948 on handy form, pages 2 and 3.

**Install vibrators easily  
with parts, connectors  
from handy kits . . .**

speeds of operation of units offered, based on 80 psi line pressure, range up to 2100 vpm

**Uses:** For use on hoppers and storage bins handling bulk sand, coal, lime, ore, cinders, slag, steel chips, cement, soda ash and similar products.

**Features:** Kits contain all parts necessary for an efficient vibrator installation and meet requirements of a wide range of applications. Quick action control valve can be installed and operated in almost any desired position to meet individual requirements.



Complete vibrator kits simplify installation

Valve can be installed to operate manually, by hand or chain, or automatically when a hopper discharge gate is opened or closed.

**Description:** Kits consist of a pneumatic vibrator, a control valve, and an air line lubricator. They also contain nipples and connectors necessary to permit rapid, easy attachment of vibrator assembly to hoppers and storage bins in range of capacities from one to several hundred tons.

Any one of the standard vibrators can be furnished in one of these kits. Piston diameters of the six standard vibrators range from 1 1/4 to 4", overall widths from 3 to 7 1/2", and overall lengths from 6 to 15". Extra large and heavy duty models can be supplied on request.

Speeds of operation for vibrators furnished, computed on line pressure of 80 psi, range from 2100 vibrations per minute on the smallest model to 750 vibrations per minute on the largest unit.

Operating speeds can be regulated by varying the line pressure.

Air line lubricator incorporates a sturdy, transparent plastic container to permit visual inspection of lubricant level. Flow of lubricant is controlled by means of an adjusting screw.

**Source:** "LVF" vibrator kits are made by The Cleveland Vibrator Company, Dept. CP, 2706 Cleveland Ave., Cleveland, Ohio . . . or for more information check CP 6949 on handy form, pages 2 and 3.

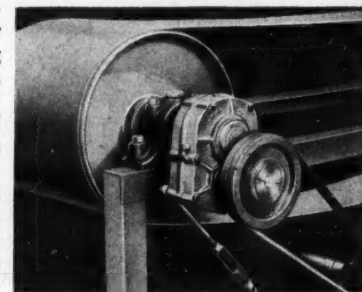
**Shaft-speeds reduced to  
desired output between  
13 and 133 rpm . . .**

"packaged" unit easily shifted from one machine to another; bushing accommodates shaft-size

**Uses:** Speed reducer for agitators, mixers, conveyors, feeders, bucket elevators, processors and similar machinery. Adaptable to any desired shaft size. Obtains output speeds of 13 to 133 rpm.

**Features:** A light, compact "packaged" unit, designed to minimize cost of installation and need for special engineering. Easily shifted from one machine to another, requiring only an inexpensive bushing to accommodate a different-size shaft.

A torque-arm anchors the reducer and provides quick, easy adjustment of belt tension through use of a turnbuckle. No sliding motor-base, foundation or flexible coupling required. When necessary to prevent reversal of load, an ingenious backstop is available; easily installed on input shaft, it is sealed from dust and dirt within the machined cast iron housing.



Easily-installed speed reducer

**Description:** Torque-Arm Speed Reducer. Unit consists of a reducer with fixed 15-to-1 ratio, driven by a motor through any flat or V-belt drive. Changing one of the stock shafts in the drive permits obtaining desired output speeds. Reducer contains double train of helical steel gears, heat-treated and shaved. It is locked to shaft, on both sides of unit, by steel locking collars. A bushing, keyed into the sleeve, adapts sleeve to desired shaft size.

Size No. 1 reducer weighs 35 lbs. Desired speed, required hp, and the size of the shaft to be driven, determine selection of proper reducer. Six sizes, in capacities to 28.5 hp.

**Source:** Dodge Manufacturing Corporation, Dept. CP, Mishawaka, Ind. . . or for more information check CP 6950 on handy form, pages 2 and 3.



## PROCESSING EQUIPMENT

### Current consumed part time after hot plate reaches desired temps . . .

temp can be maintained within close limits; flat-type elements prevent "cold" spots

**Uses:** General laboratory heat source for controlled temperatures within range of 140 to 850°F.

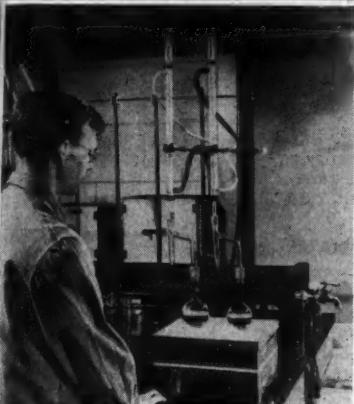
**Features:** Provides stepless heat control. Consumes current only part of the time after desired surface temp is reached. Heating elements are completely embedded for

safety; are flat-type, preventing "cold" spots.

Temperatures can be maintained within close limits over entire range.

#### Description:

Temco is available in 12 x 12" and 12 x 24" sizes for either 115 or 230 volt operation. Lower portion which houses the controls is separated from the cast alu-



Hot plate provides stepless heat control

minum plate by Trancell insulation. Louvers are provided to aid in carrying heat away from laboratory table tops.

**Source:** Hot plate is product of the Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or for more information check CP 6951 on handy form, pages 2 and 3.

### Blasts of reverse air prevent clogging of cloth bags in dust collector . . .

permit constant, uniform suction, eliminate shutdowns for cleaning, and reduce cloth-deterioration

**Uses:** Cloth screen filters for collecting industrial dusts, including extremely fine particles. For application to new or existing installations. Collects any of 111 kinds of dust, including arsenic, aluminum, rubber, plastic, salt, sulphur, talc, etc.

**Features:** Suction at dust-source remains uniform with continuous, automatic operation. Dust layers cannot build up on cloth, causing gradual loss of efficiency. No mechanical shaking and flexing of bags. Eliminates auxiliary bag-cleaning equipment, saving floorspace and avoiding shutdowns. Less cloth-deterioration.

**Description:** Frequent blasts of reverse air prevent accumulation of dust on filter bags. These blasts, introduced by means of a "traveler" with flexible tube which permits outside air, at atmospheric pressure, to enter the suction system, cause a reverse air-flow through the center bag of the three filter bags which are blocked-off by the traveler at any one time.

Dust is thus loosened and removed from one bag at a time, whence it drops into the hopper.

**Source:** The W. W. Sly Mfg. Company, Dept. CP, 4700 Train Ave., Cleveland 2, Ohio . . . or for more information check CP 6952 on handy form, pages 2 and 3.

# Pittsburgh Agricultural Fungicides



## Pittsburgh Spergon-sl\*

### A safer, better seed protectant

Pittsburgh Spergon-sl is a non-metallic organic chemical fungicide . . . a highly effective protectant against the harmful fungi that cause seed decay and "damping off" of plants in the early post-emergence stage. Spergon-treatment of seeds, prior to planting, largely prevents seed and crop losses, as well as delays caused by necessity for reseeding.

Best of all, it is a really *safe* protectant to use . . . *safe* for humans, for animals, and for the seed itself. It is non-irritating to flesh or to the sensitive mucous membrane of the operator. And even an over-application of it cannot harm most valuable seed. More, this dry wettable powder can be used in either the slurry method or as a dry seed treatment and will not cause sticking or clogging in seed drills. It can be safely applied, too, with legume inoculation bacteria, if used according to directions. For corn, peas, beans, alfalfa and many other seeds, Pittsburgh Spergon-sl is the "perfect" protectant.

Write for a bulletin giving full technical information.

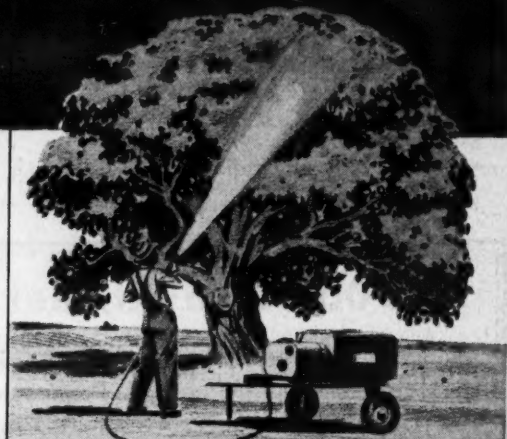
\* Registered trade name for tetra-chloro-para-benzoquinone



COAL CHEMICALS, ACTIVATED CARBON, NEVILLE COKE, EMERALD COAL, FIG IRON, GREEN BAG CEMENT, CONCRETE PIPE AND PRODUCTS

PITTSBURGH COKE & CHEMICAL COMPANY

1953 Grant Building • Pittsburgh 19, Pa.



## Pittsburgh Phygon

Pittsburgh Phygon-sl is a highly effective spray for the control of many of the fungous diseases of fruit trees, ornamental shrubs, and vegetables. It may be utilized, also, as a seed protectant.

It is easy to use, may be added directly to the water in the spray tank and is compatible with lead arsenate, DDT, Rotenone and Chlordane.

Ask for a bulletin giving full information about application.

\* Registered trade name for 2, 3-dichloro-1, 4-naphthoquinone

PITTSBURGH AGRICULTURAL CHEMICAL COMPANY  
Empire State Building • 350 Fifth Avenue • New York 1, New York

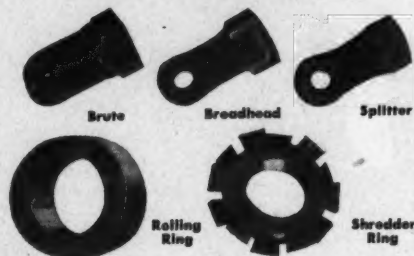
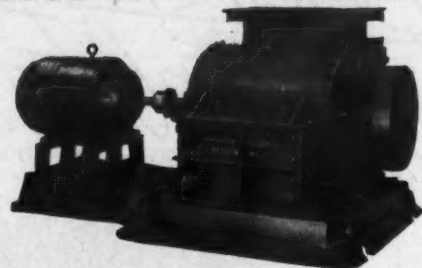
Affiliated with

When inquiring check CP 6953 on handy form, pgs. 2-3

## GET UNIFORM REDUCTION and HIGH TONNAGE too . . . with an AMERICAN "24" Series CRUSHER

You can maintain rigid control over uniformity while achieving high tonnage reduction of your materials—with an American "24." Equipped with ring or hammer-type rotors, this versatile crusher reduces all hardnesses of mineral or fibrous materials—rapidly and uniformly—to give you dependable, volume production at low cost. For the exact reducing action you require . . . the rugged, balanced American rotor can be equipped with rolling rings or shredder rings—or rotor can be supplied for any of three hammer types—to give you the flexibility and exact reducing action you require.

Write for information on the complete line of Americans.



**American PULVERIZER COMPANY**  
Originators and Manufacturers of Ring Crushers and Pulverizers  
1067 Macklind Ave.  
St. Louis 10, Missouri

When inquiring check CP 6954 on handy form, pgs. 2-3

## \$500.00 in Annual Awards plus awards of \$25.00 each for New Solutions of Processing Problems

. . . plastics processor cuts production delays and maintenance costs by chemically removing boiler scale in one-third the time formerly required . . . paper company saves thousands of dollars worth of improperly-stored paper for manufacture into milk bottle caps by adding inexpensive masking perfume base to paraffin impregnant . . . pharmaceutical manufacturer employs unique conveyor system to keep pace with three-fold production step-up . . .

. . . simple de-ionizing process enables brewer to overcome undesirable appearance and flavor of his product . . . processor slashes weighing costs 56%, and saves \$15,000 per year by using faster, new-type balances to weigh synthetic resins . . .

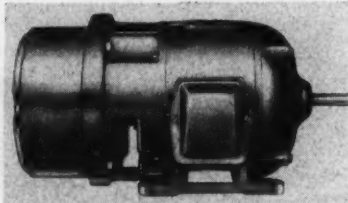
*These, or similar problems, are being met and solved today right in the plant where you work. You can turn these ideas into cash. See pages 4 and 122 for the facts.*

## PROCESSING EQUIPMENT

**Frequent, instant stopping,  
starting of 1 to 60 hp  
motors . . .**

brake of brake motor is useful for "matched" mountings

**Uses:** Brake motor and brake. For applications requiring frequent, instantaneous stopping and starting. Particularly useful in inaccessible locations. The brake itself can be mounted on drip-proof, splashproof or totally-en-



Brake linings are unaffected by salt water, oil, etc

closed motors to make a matched brakemotor in ratings from one to 60 hp.

**Features:** Bonded metal brake linings are unaffected by heat, cold, dampness, salt water, fungi, grease or oil.

All-metal brake discs and new brake lining eliminate adjustments and replacements in normal applications. Prelubricated-for-life cartridge bearings. Compact, simple design.

**Description:** Brake is available separately for mounting on NEMA Standard D flange motors in frames 203-326 or C face motors in frames 364-405 with standard double-shaft extensions.

**Source:** Crocker-Wheeler Electric Mfg. Div. of Joshua Hendry Corp., Dept. CP, Ampere Station, N. J. . . . or for more information check CP 6955 on handy form, pages 2 and 3.

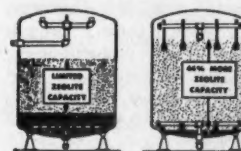
### Interior, exterior coatings with rutile pigment

Pigment-type titanium dioxide — suggested for use in interior and exterior coatings, printing inks, and vinyl plastics — is related in 7-page bulletin. Lists and describes features: fineness, chalk resistance, good color and gloss producing properties, and efficiency in mixing and grinding procedures.

Tabulates data for this rutile in various coatings: mixing and grinding consistency, exposure to light, etc. Calco Technical Bulletin No. 900, issued by Calco Chemical Division, American Cyanamid Company, Dept. CP, Bound Brook, N. J. When inquiring specify CP 6956 on handy form, pages 2 & 3.

## Everything in Water Conditioning ... that's ELGIN

In process industries the water conditioning problem may seem complicated. But whatever the problem, Elgin has the answer. Products and methods include water softeners, iron removal, corrosion prevention, taste and odor correction, filtration, oil removal and chemical treatments. A typical example of Elgin progressiveness is the



ORDINARY DESIGN ELGIN DESIGN  
SAME SIZE UNIT—SAME TYPE ZEOLITE

## ELGIN "Double-Check" WATER SOFTENER

The diagrams tell the story: "Double-Check" manifolds prevent loss of zeolite . . . permit deeper zeolite bed which greatly increases soft water output . . . gives more efficient operation. Net result, proved by thousands of installations is

**44% MORE SOFT WATER** per regeneration than other softeners of same size using same kind of zeolite.

Extra gallons of soft water from your present softener—The "Double-Check" is adaptable to existing softeners of any make. "Double-Check" with Elgin high-capacity zeolites increases soft water output 3 to 10 times.

WRITE FOR BULLETIN 610

## ELGIN SOFTENER CORPORATION

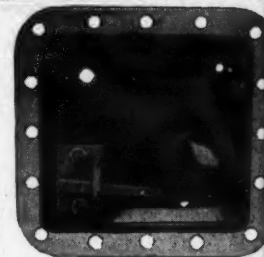
180 N. GROVE AVE., ELGIN, ILL.

When inquiring check CP 6957 on handy form, pgs. 2-3

## ARE YOUR TRAPS WASTING STEAM?

## ROCKWELL Continuous Drain TRAPS

**Instantly Remove  
Water, Oil and Dirt  
from Steam, Gas or  
Compressed Air  
Lines**



- Steady Flow
- No Steam Loss
- No Valve Wear
- No Priming
- No Leakage
- No Noise

Provide maximum capacity for uniform temperature and pressure conditions. A simple slide valve and float mechanism regulate flow of condensate or fluid according to its accumulation in the trap. Movement of the slide valve over the discharge orifice with the rising or lowering of the float prevents short circuiting of vapor. Pipe connections are on one side of trap; easy cleaning without breaking line.

Made in 1/2", 3/4" and 1" sizes, to 300 p.s.i. and to 750' F. Write for Bulletin No. 600.

W. S. ROCKWELL CO. + 220 Eliot St., Fairfield, Conn.

When inquiring check CP 6958 on handy form, pgs. 2-3



## PROCESSING EQUIPMENT

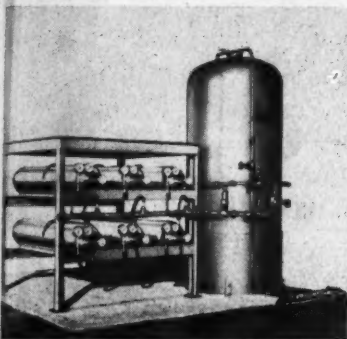
### Fire protection for extensive areas with minimum manpower . . .

pipelines carry dry chemical from 500, 1000, 2000-lb tank to strategically-located hose houses

**Uses:** Stationary dry chemical fire-fighting units of 500, 1000 and 2000-lb capacities, for protecting extensive areas where only limited manpower is available.

for refineries, large chemical plants, petroleum and natural gas fields, gasoline storage areas and bulk plants, liquefied petroleum gas tank farms, railroad yards, etc.

**Features:** One person, such as a night watchman, can operate the stationary unit, fighting a fire in any portion of an area several acres in size.



Stationary dry chemical fire-fighting unit

**Description:** Consists of a centrally-located steel tank containing dry chemical and nitrogen cylinders, the latter for pressurizing the tank. Piping runs underground from the tank to one or more hose houses, where 1" chemical engine hose is coiled.

Hose is furnished in 50, 100 or 150' lengths.

Flow-rate of dry chemical is 450 lbs per minute. Recoil is minimized by a nozzle of special design. Effective range, about 35'.

500-lb unit has one 365-cu-ft nitrogen cylinder. The 1000 and 2000-lb units have two and four cylinders respectively. Number of hose houses and piping outlets is determined by user's needs.

**Source:** Ansul Chemical Company, Dept. CP, Marinette, Wis. . . . or for more information check CP 6959 on handy form, pages 2 and 3.

### Prevent overlubrication of light bearings and shafts with underfeed oiler . . .

oiler stops feeding when surface is not in motion

**Uses:** For oiling bearings and shafts requiring very small amount of oil.

**Features:** Oiler stops feeding when oiled surface is not in motion. Transparent plastic bottle keeps oil supply visible at all times.

**Description:** Available in 1, 2 and 4-oz capacities, the underfeed oiler has self-closing filler cap, can be used where ambient temps do not exceed 170° F.

One end of solid felt wick is held in contact with lubricated surface by spring. Oil is raised by capillary action to the bearing or shaft.

**Source:** Trico Fuse Mfg. Co., Dept. CP, 2948 No. 5th St., Milwaukee 12, Wis. . . . or for more information check CP 6960 on handy form, pages 2 and 3.



Underfeed oiler

# WHY DON'T YOU SAVE THIS KIND OF MATERIAL HANDLING MONEY?

## CASE HISTORIES

### Reveal 50% to 75% Cut in Costs With Automatic Electric Truck Handling

#### PAPER & PRINTING

##### Handling, Storing Flat Paper Stock OLD METHOD

Said loads moved and stored by 2 men with hand trucks.  
2 MEN X 8 HOURS . . .  
... 16 MAN-HOURS PER DAY

##### NEW METHOD

1 MAN with 1 AUTOMATIC TRANSTACKER

1 MAN X 8 HOURS . . .

... 8 MAN-HOURS PER DAY

SAVINGS 8 MAN-HOURS PER DAY

at \$1.00 per hour... \$8.00 per day

ANNUAL SAVINGS... \$2,000.00

BONUS... 2900 additional sq. ft. storage space at 80c per sq. ft.. \$2,320.00

TOTAL ANNUAL SAVINGS \$4,320.00



#### ELECTRIC APPLIANCES

##### Unloading Radio Cabinets OLD METHOD

Cabinets unloaded from car and moved by hand truck.  
To unload one car  
25 MAN-HOURS  
LABOR COST per car \$32.75

##### NEW METHOD

2 MEN with 2 AUTOMATIC SKYLIFTS 6 MAN-HOURS

To unload one car  
SAVED PER CAR . . .

... 19 MAN-HOURS

LABOR COST

Saved per car... \$24.89

250 CARS . . .

Man-Hours Saved. 4,750

HANDLING COSTS SAVED \$6,222.50



#### METAL PRODUCTS

##### Handling Tinplate OLD METHOD

Moving heavy tinplate in bundles weighing 2,800 pounds each from freight car to storage by hand truck

To unload one freight car  
9 MEN 3 hours... 27 MAN-HOURS

##### NEW METHOD

3 MEN with 3 TRANSPORTERS

To unload one freight car

3 MEN 1 HOUR... 3 MAN-HOURS

SAVINGS PER CAR... 24 MAN-HOURS

LABOR COST SAVED PER CAR

24 Men-Hours X \$1.00 per hour... \$24.00

BONUS 6 additional men available for more productive work



#### WAREHOUSING

##### Handling Building Materials OLD METHOD

Unloading flat cars of insulating board and moving to storage by hand truck manual operation.

COST OF UNLOADING AND STORING . . . \$28.00

##### NEW METHOD

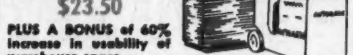
1 OPERATOR and 1 HELPER with 1 AUTOMATIC ELECTRIC FORK TRUCK

COST OF UNLOADING AND STORING... \$4.50

SAVING PER FLAT CAR

\$23.50

PLUS A BONUS of 40% increase in usability of warehouse space.



All American Industry is using this service-proved, Automatic Electric Truck way to cut material handling costs 50% to 75% . . . to end back-breaking labor, cut down accidents, product damage.

Read the case histories on this page. They are typical of many in our files. *YOU* can save that kind of money too, no matter what your product.

Whether it's the Transporter, that lifts and moves tons of your product with easy finger-tip control, or the Transtacker or Automatic Skylift Electric Trucks that stack as well as lift and move your material, these brawny electric trucks save you costly man-hours, pay for themselves in as little as months.

Daily battery charging cost amounts to pennies, not dollars, and maintenance cost is insignificant. Send for FREE CATALOG "How to make your Material Handling Pay Dividends" . . . and see how you can save the kind of money reported in these case histories. Mail coupon.

### Trade Automatic Mark

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Dept. C-5, Chicago 21, Illinois

Please send me your FREE CATALOG "How to Make Your Material Handling Pay Dividends" with additional case histories showing typical savings in my business.

Company Name.....

By..... Position.....

Street Address.....

City..... Zone..... State.....



#### MAIL COUPON FOR

FREE CATALOG



When inquiring check CP 6961 on handy form, pgs. 2-3

- CLOTH FOR HOT ACID FILTRATION
- CLOTH FOR HOT DUST COLLECTION

**USE CLOTH MADE FROM  
"ORLON"™ Acrylic Fiber**



**T**his cloth is available in standard width of 38" from stock. We will weave any desired width from 26" through 72" to your order in quantities as low as 100 linear yards.

We have a background of over Forty Years in weaving Industrial Fabrics...we weave all of our own Synthetic Fiber Filter Fabrics. We have the "know how" necessary to produce uniform Filter Cloth with outstandingly superior operating characteristics.

Literature and pilot test sample available on request.

Also Weavers of Filter Cloth from:

**GLASS, SARAN, NYLON  
VINYON† and VINYON N†**

\*TM — E. I. duPont de Nemours  
†TM — C & C

If high operating temperatures are your problem we suggest you try this NFM cloth made from ORLON™ Acrylic Fiber. Here are some of its values:

No loss of strength after 32 days exposure to air at 257° F.



Shrinkage not more than 2 1/2 % in water at 212° F.



Good resistance to hot mineral acids, weak alkalies, common solvents, oils, greases, neutral salts, most acid salts and chlorine.



Weavers of Industrial Filter Media for over Forty Years

**The National Filter Media Corp.**

General Offices & Mills: New Haven 14, Conn.  
Western Office & Factory: Salt Lake City 1, Utah

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2627 West 19th St. Roselawn Center Bldg. 1406 Second National Bank Bldg. Nicolai Felix Edward L. Bateman

When inquiring check CP 6962 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

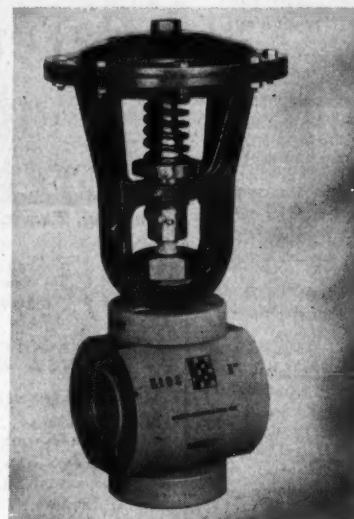
**Corrosive flowage at 300 psi,  
2000° F, handled by special  
ceramic valves . . .**

valve body is 9/10 as hard as diamond, with tensile strength of 27,000 psi

**Uses:** Ceramic valves for continuous 300 psi operation at temperatures up to 2000° F. For controlling the flow of highly corrosive gases and concentrated or diluted chemicals, excepting hydrofluoric acid and hot alkali concentrate.

**Features:** Valve bodies are machined from solid slug of special ceramic prior to final firing. The ceramic will not absorb moisture, and finished body has hardness 9/10 that of diamond, with 27,000 psi tensile strength (300-400% stronger than normally). Compressive strength is 290,000 psi; specific gravity, 3.63; modulus of elasticity, 40,200,000.

Valve stem is fabricated of same ceramic, with alternate hard and soft Teflon packing rings incorporated as seals.



Ceramic valve

### Description:

Furnished in 1/2, 3/4, 1, 1 1/2, 2 and 3" sizes, designed for attachment to 300-lb standard ASA flanged fittings by means of stainless steel cap screws. Stainless steel studs can be mounted permanently in valve body if desired. Diaphragm and hand-operated types, lubricated or unlubricated, are available.

**Source:** Emmett Machine & Mfg. Company, Inc., Dept. CP, 2249-72 Fourteenth St. S.W., Akron 14, Ohio . . . or for more information check CP 6963 on handy form, pages 2 and 3.

**Constant 375° F temperature  
keeps heavy oil flowing  
freely through tanks . . .**

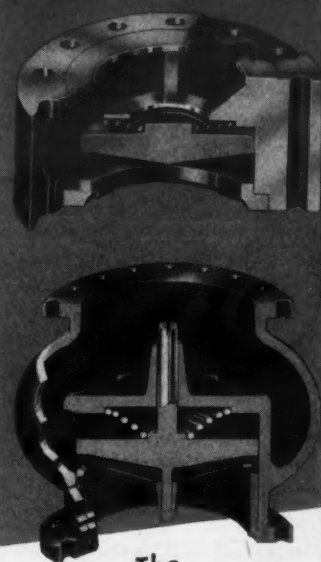
tubular heaters at base of each tank, and around pipelines, do job at low cost

**Uses:** Tubular electric heaters for storage-tank pipelines, similar installations, where heat is necessary to overcome flow-resistance.

A typical installation is that at Brooks Oil Company, Cleveland, where a constant temperature of 375°F is essential to keep heavy compound oil flowing through a series of temporary storage tanks. (In finished form, these mineral-based extreme-pressure lubricants are used in mill operations of the steel industry, where they must withstand heat and water under conditions of heavy pressure.)

**Features:** Even heat-distribution plus low heat-loss, with resultant favorable operating costs.

**Description:** In the installation described, G-E Calrod formed tubular heaters are clamped to the base of each



The  
**WILLIAMS-HAGER**  
flanged  
*Silent check*  
**VALVE**

- durable
- compact
- accessible
- low friction

the economical  
practical solution  
to costly  
**WATER HAMMER**

With its renewable disc and seat, non-wearing conical spring, the Williams-Hager Valve offers dependable protection in any position—horizontal, vertical with upward, vertical with flow downward and angular—easily installed. Easily installed or resealed without special tools, it is available in standard pipe sizes from 1" to 20"

Write for Bulletin WH 100

**THE WILLIAMS GAUGE CO**

Pump Valves . . . Water Gauges . . . Gauge  
Cocks . . . Steam Traps . . . Pump Governors  
... Feed Water Regulators . . . Water Columns

3015 PENNSYLVANIA AVE. • PITTSBURGH (12), PA

When inquiring check CP 6964  
on handy form, pgs. 2-3

CHEMICAL PROCESSING



# Magnolia Airco

## Nitrogen Hydrogen Rare Gases and Liquids

Are the Standard of Quality  
in the Southwest

Magnolia Airco gases — oxygen, nitrogen, hydrogen, argon, helium, neon, krypton, xenon, and liquid oxygen, nitrogen and air — are known throughout the Southwest for their high purity, unvarying uniformity and dependable quality. This uniformity and adherence to specifications of Magnolia Airco gases, and rare gas mixtures, are definite factors contributing to their satisfactory use.

And, no matter where your plant is located in the Southwest, you can depend on Magnolia Airco for a steady, dependable gas supply, packaged to meet your needs.

For more information, write your nearest Magnolia Airco office.



### AIR REDUCTION MAGNOLIA CO.

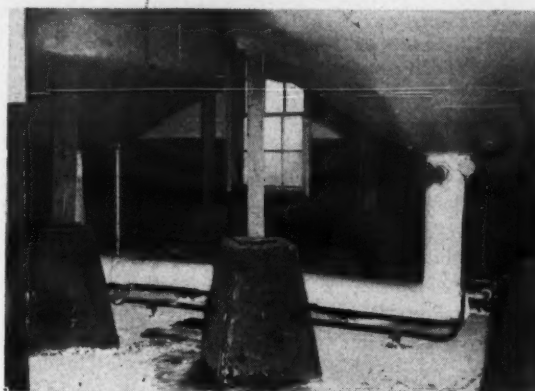
A Division of Air Reduction Company, Incorporated

Houston • Beaumont • Corpus Christi  
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Wichita Falls • El Paso

Southwestern Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories.

When inquiring check CP 6965  
on handy form, pgs. 2-3

## PROCESSING EQUIPMENT



Installation of tubular heating units at base of oil tanks at Brooks Oil Company, Cleveland

tank; they are also wound around pipelines and covered with protective layers of sheet metal and asbestos, cutting heat-loss to minimum. Thermostatic control provides even distribution of heat throughout pipelines.

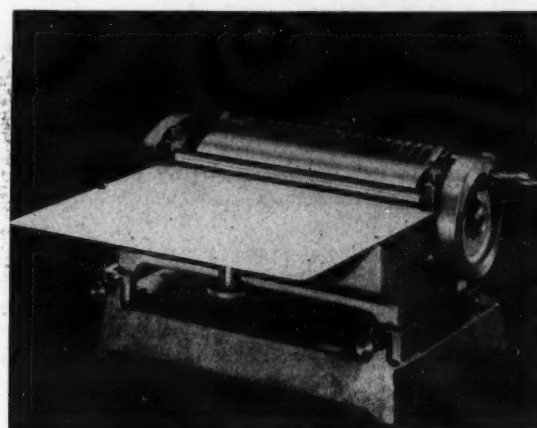
Source: General Electric Company, Apparatus Div., Dept. CP, Schenectady 5, N. Y. . . . or for more information check CP 6966 on handy form, pages 2 and 3.

### Speed label-gumming with portable hand-operated 10-lb. machine . . .

applies adhesive to labels of any length, shape, up to 5-3/4" wide; saves labor and clean-up time

Uses: Hand-operated label gummer for applying adhesive to labels of any length or shape up to 5-3/4" wide.

Features: Portable; easily carried by hand from one department to another. Use of ungummed labels cuts material costs as well as inventory waste on gummed labels.



Hand-operated label gummer

Saves labor and clean-up time over manual glue-and-brush application. Unskilled worker can operate it without special training.

Description: Weighs 10 lbs. Dimensions are 10 x 10 x 5-1/2". Gluepot is cleaned by being lifted off and rinsed in water. Model F6-H.

Source: King Sales & Engineering Company, Dept. CP, 210 First St., San Francisco, Calif. . . . or for more information check CP 6967 on handy form, pages 2 and 3.

# SAVE!

\$9 of every \$10 you spend

## for INERT GAS

THIS KEMP INERT GAS PRODUCER  
DELIVERS INERT GAS FOR 10%  
OF YOUR PRESENT COST!

Don't pay premium prices for your inert gas! This Kemp Inert Gas Generator produces inerts at a saving of 83% to 90%. Saves you money no matter whether you use bottled inerts or produce them with old-fashioned, fuel-hungry equipment. This fully automatic Kemp Generator has push button starting . . . automatic proportioning over full operating range and automatic fire check.

### ABSOLUTELY DEPENDABLE

Kemp Generators burn ordinary gas just as it comes from the mains. A famous Kemp Carburetor, part of each installation, assures complete combustion . . . producing a clean,

chemically inert gas containing 88% nitrogen, 12% CO<sub>2</sub> . . . a gas so pure it is used without further processing in the manufacture of aspirin and laboratory chemicals, fine paints, and many other products.

### SEND FOR PROOF!

Whether you need inerts for purging, fire protection, mixing, blanketing or a special application . . . specify Kemp. For technical information write for special bulletin. To find out how much you can save: tell us what you spend for inerts now. Then let us show you how much Kemp saves you per mcf. Mail coupon today!

## KEMP INERT GAS GENERATORS OF BALTIMORE

THE C. M. KEMP MFG. CO., Dept. G-3,  
405 E. Oliver St., Baltimore 2, Md.

Gentlemen: Send me information. Also show me how much we can save on inerts.

CARBURETORS  
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METAL MELTING UNITS  
SINGING EQUIPMENT  
SPECIAL EQUIPMENT

Name .....

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Address .....

City ..... Zone ..... State .....

When inquiring check CP 6968 on handy form, pgs. 2-3

# CHEMICAL BARGES



with *Built-In Savings*



One fabricator, one profit—a coordinated job from blue-prints to delivery. Such were the advantages that our customer, one of America's largest and most discriminating concerns, found in choosing Ingalls to build its fleet of four new chemical barges.

The 195 ft. barges were built at our Pascagoula, Miss., and Decatur, Ala., shipyards, while the high pressure tanks were fabricated simultaneously at our Birmingham and Pascagoula plants by our subsidiary, the Birmingham Tank Co.

Each barge has a carrying capacity of 234,000 gallons. The tanks may be mounted separately or made removable in the open hopper type barge. For coastwise service and for open water on the intercoastal canals, the tanks may be installed below deck in similar tank type barges.

Let Ingalls "build-in" the profits on your next tank, barge or plate work order. Quite often, economies result from joint use of our modern fabricating facilities that can be passed on to the customer. Write, wire or telephone for information.

## INGALLS INDUSTRIES

MAIN OFFICE: BIRMINGHAM, ALA.

SALES OFFICES: NEW YORK, CHICAGO, PITTSBURGH, NEW ORLEANS

STAINLESS STEEL VESSELS • STORAGE AND PROCESSING TANKS  
STRUCTURAL STEEL • BARGES — SINGLE AND INTEGRATED  
TOWBOATS • WORKBOATS • REPAIRS • CONVERSIONS

When inquiring check CP 6969 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**5-gph unit employs technique of mixed-bed ion exchange to obtain quality water . . .**

delivers product with electrical resistance of 10 million ohms per centimeter

**Uses:** For converting 5 gph of ordinary tap water to water of a chemical quality otherwise obtainable only through triple-distillation.

Delivers water with an electrical resistance of 10 million ohms per centimeter; in other words, water containing one part of ionic solids per 100 million parts water.

**Features:** Portable, furnishing high-quality water at low cost. Assures increased life for storage batteries, less scale in sterilizers, etc.



Conductivity meter in base registers quality of water produced

**Description:** A miniature ion-exchange tower employing a technique of conditioning water by passing it through a mixed bed of Amberlite ion exchange resins, as discovered by researchers at Resinous Products Div. of Rohm & Haas Company, Philadelphia.

"Deeminizer" consists of rigid polystyrene tube which accommodates a replaceable plastic container filled with Deeminite, a

specially-converted form of Amberlite exchangers. In operation, a jar of water is up-ended in the top of the tube; the water passes through glass-fiber filters which remove physical impurities. Thence it passes through the bed of resins which remove ions that contribute hardness.

Output is drawn off through a polyvinyl hose in the gray metal base. Occupying 48 sq. in. of table space, the base contains a conductivity meter which, at the touch of a button, registers instantly the quality of water being produced. An accurate meter scale indicates when to replace cartridge.

Costs of producing 1-million-ohm water varies with nature of water in various geographical localities.

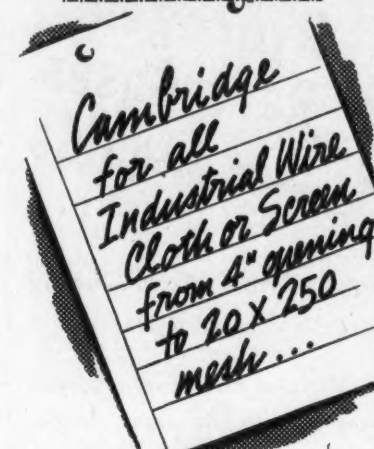
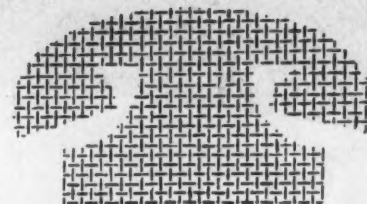
**Source:** Crystal Research Laboratories, Inc., Dept. CP, Hartford, Conn. . . . or for more information check CP 6970 on handy form, pages 2 and 3.

**Accurately measure chlorine gas, deliver water solution to point of use . . .**

chlorine rate indicator has linear scale for easy, accurate reading at all rates

**Uses:** For accurately metering chlorine gas and to produce and deliver a chlorine water solution to the point of application. Provides closely controlled concentrations of chlorine water solutions for process use.

**Features:** Positive and accurate chlorine rate indicator simplifies readings at all rates. Maintenance due to cor-



. . . any metal or alloy in any gauge, mesh and weave that will give you the best performance in your filtering or screening operations or for fabricating purposes. Cambridge offers you one-source buying simplicity on all your wire screen or metal cloth requirements.

Your Cambridge Field Engineer is an experienced and fully qualified consultant, ready to help you solve any industrial wire cloth problems. He is backed by large stocks of standard materials, skilled craftsmen and modern facilities for fast service on highest quality specially woven items.

**CONSULT YOUR CAMBRIDGE MAN OFTEN**



Thousands of items in stock ready for prompt shipment to you.

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**Cambridge Wire Cloth Co.**

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trays • crates • screens  
baskets • fixtures

OFFICES IN PRINCIPAL INDUSTRIAL CITIES  
See "Wire Cloth" in your Classified Telephone Directory.

When inquiring check CP 6971 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## PROCESSING EQUIPMENT

vision is reduced to a minimum because chlorine is controlled and metered in the dry inert state. No hot water or bell jar heaters required, because vital control parts handle dry, inert chlorine gas, completely eliminating "chlorine ice" difficulties.

Feeder is readily adapted to semi-automatic, program or automatic proportional operation. Conversion from one method of operation to another may be made in the field.

Tray produced chlorine odors are eliminated by circulation of tray water used in producing solution.

Chlorinizer is equipped with automatic safety devices which shut off flow of chlorine gas in event of any occurrence hampering safe operation. The principal safety device is the diaphragm relief valve which is incorporated in the chlorine control valve. It prevents escape of chlorine gas when (a) there is any break in the line from the chlorine control valve to the injector; (b) breaking of the bell jar; (c) stoppage in the injector.

Should the water supply fail, no water pressure would be available for control, therefore the chlorine valve closes automatically. If, in spite of exceptionally high closing force, chlorine valve should leak, chlorine would flow through the system into the bell jar.

Under such conditions the air relief valve, located under the bell and vented to the outside atmosphere, prevents the escape of gas into the room. Bottom of valve which consists of flask over the air relief pipe, is above the bottom of the open bell jar, so that the chlorine gas, taking the path of least resistance, passes out of the vent into the atmosphere, rather than break the water seal around the bottom of the bell jar.

**Description:** Operation of this chlorinizer is very simple. Water at a reasonably constant pressure above 20 psi is the sole requirement for manually controlled installations discharging against heads up to 15' above atmospheric pressure.

In the manual and semi-automatic chlorinizers the water pressure in the lower diaphragm chamber is determined by the setting of the rate control valve by means of the rate setting knob, located at the foot of the panel. In the program operated chlorinizer this pressure is automatically established by a simple cam-actuated regulating valve. In the automatic proportional chlorinizer this is accomplished by a pneumatic or hydraulic converter which delivers an output pressure varying with flow through a Venturi tube or orifice plate.

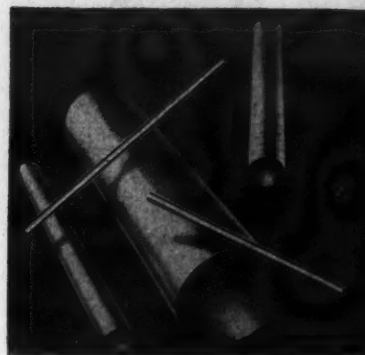
Panel type enclosures with wide, turn-back sides provide a cabinet type appearance while affording easy access to all working parts.

**Source:** Volumetric Model DVS chlorinizer is built by Builders-Providence, Inc., Dept. CP, Providence 1, R. I. . . or for more information check CP 6972 on handy form, pages 2 and 3.

### Relates applications of froth flotation

Applications of froth flotation are set forth in 4-page illustrated bulletin. Discusses separation of near-colloidal size particles from a saturated brine, fractionation of fine clays, recovery of fossil resin from coal, cleaning peas from wheat, water purification, and correcting stream pollution.

Bulletin No. F10-B46, issued by Dept. 316, Denver Equipment Company, Dept. CP, Denver 17, Colo. When inquiring specify CP 6973 on handy form, pages 2 and 3.



## industry wide...it's

## TRENTWELD

In processing plants throughout industry where cleanliness, corrosion, heat or abrasion are production problems, more and more engineers and designers are looking to TRENTWELD Stainless Steel Tubing for the answer.

That's because TRENTWELD is made in a tube mill by tube experts . . . who roll and weld stainless and high alloy tubing *without* added rod metal. Developed by Trent specialists, this method results in tubing that is metallurgically correct and has a uniform section . . . with no zone of weakness for corrosion to attack.

The complete TRENTWELD line . . .  $\frac{1}{8}$ " to 22" diameter in long lengths and up to 30" diameter in shorter lengths . . . offers a wide range in a variety of grades, gauges and finishes for almost every industrial application.

Whatever your industry, there's TRENTWELD Tubing to fit your design. Our years of experience as tube specialists is at your call. Write us full details about your application.

### TRENT TUBE COMPANY

Subsidiary Crucible Steel Company of America  
Sales Offices: Chicago—4501 W. Cortland Street  
New York—Chrysler Building

## TRENTWELD

## STAINLESS STEEL TUBING

When inquiring check CP 6974 on handy form, pgs. 2-3



for finishes

or food!



## process men value DOWTHERM

THE HEAT TRANSFER MEDIUM  
FOR HIGH TEMPERATURES

for operating economy

Process men in hundreds of widely diversified industries have proved by long use the economies offered by Dowtherm—the *controlled* heat transfer medium. Operating at low pressures with precise uniformity over a wide range of high temperatures, Dowtherm effects vital savings in time and materials. Uniform temperatures put an end to spoiled batches, costly shutdowns and replacements . . . increase quality and production. Dowtherm assures efficiency in heat processing operations with a minimum of maintenance and operating costs.

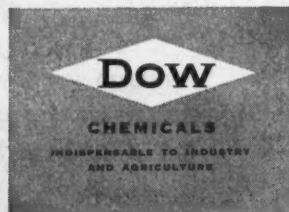
If your operations require precise heating in the 300°-700° F. range, write to Dow for complete information about Dowtherm.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Atlanta  
Cleveland • Detroit • Chicago • St. Louis • Houston  
San Francisco • Los Angeles • Seattle  
Dow Chemical of Canada, Limited, Toronto, Canada



**DOWTHERM**

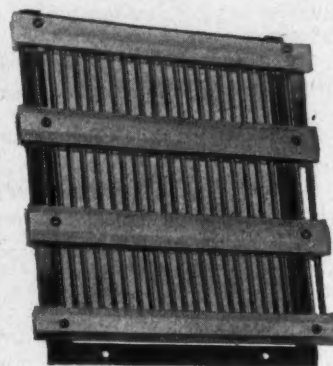


When inquiring check CP 6975 on handy form, pgs. 2-3

### PROCESSING EQUIPMENT

**Rack-type heating elements  
used in dryers, kettles,  
air heaters . . .**

units are electric, 12" square; furnish 1.5 to 300 kw;  
give long service at 750 or 1350° F.



Standard rack-size heating element

**Uses:** Electric heating elements, in standard-size racks, for use in kettles, autoclaves, melting pots, air heaters, grills, dryers, plating tanks, core and armature bake ovens, salt baths, and glass and wire annealing, air conditioning, similar applications.

**Features:** Can be arranged horizontally or vertically, in all types of equipment, to furnish from 1.5 to 300 kw. Economical operation. Easily installed. Long service at temperatures up to 750 or 1350° F. Low wattage, high voltage surface area.

**Description:** "Folded-and-formed" continuous-ribbon-type elements are located in high-temperature refractory porcelains, supported on steel or stainless steel frames, 12" square. Racks are drilled for mounting.

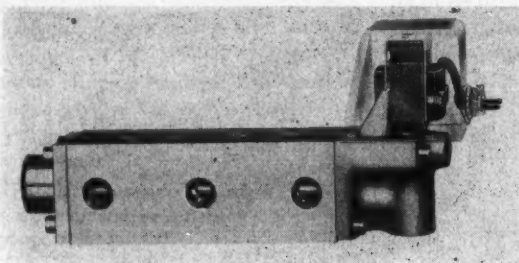
**Source:** Trent, Inc., Dept. CP, 235 Leverington Ave., Philadelphia 27, Pa. . . or for more information check CP 6976 on handy form, pages 2 and 3.

**Small solenoid of single-plunger  
valve assures fast action,  
requires less current . . .**

reduced impact and maintenance also noted; valve is well-suited to high cycle usage

**Uses:** Solenoid-operated single-plunger valves. Can be operated at high speeds at normal air pressures and are, consequently, well-suited for use with certain production welders and other high cycle requirements. Also for operation with standard types of pilot switches.

**Features:** Reduced amperage requirements of the small,



Solenoid valve with single plunger

short-stroke solenoid makes possible its operation with standard pilot switches, avoiding intermediate relays and simplifying the electric control circuits. Reduced inertia of solenoid and pilot valve prevents destructive impact and lessens possibility of solenoid trouble resulting from voltage variations.

Have You  
determined  
whether or not

**SPRAY  
DRYING**  
will solve your  
drying requirement  
at lower cost?

**BOWEN TEST  
FACILITIES ARE  
AVAILABLE NOW  
AT LOW RATES**

The results of over 20 years intensified Spray Drying research by Bowen is available to help you produce a better product. And facilities for testing include our standard laboratory dryer for preliminary runs and a full scale production Spray Dryer for sample lot and tonnage production.

**BOWEN DESIGNS A  
COMPLETE LINE OF  
SPRAY DRYERS**

*Laboratory  
TO  
High Tonnage  
Production*

WRITE TODAY FOR FULLY  
ILLUSTRATED LITERATURE

**BOWEN  
ENGINEERING, INC.**

NORTH BRANCH 1  
NEW JERSEY

Recognized Leader in  
Spray Dryer Engineering  
... Since 1926



When inquiring check CP 6977  
on handy form, pgs. 2-3

CHEMICAL PROCESSING



## PROCESSING EQUIPMENT

**Description:** Sizes are  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1", in 2, 3, 4 and 5-way designs. Air to 200 psi; oil or water to 250 psi. Type SA.

Small solenoid travels through  $\frac{1}{8}$ " stroke to move small pilot-valve plunger, applying air to operating piston and moving main valve plunger. When solenoid is de-energized, the pilot cylinder is exhausted through small pilot valve, permitting main plunger to return due to bucking cylinder pressure on opposite end.

Solenoid plunger and pilot cylinder weigh only a few ozs. Housing and all internal parts of unit, except packing, are brass or bronze. Plungers and operating pistons are stainless steel.

**Source:** C. B. Hunt & Son, Inc., Dept. CP, Salem, Ohio . . . or for more information check CP 6978 on handy form, pages 2 and 3.

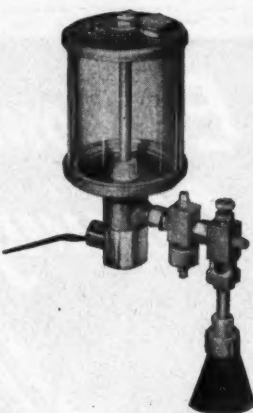
### **lubricates conveyor chains automatically, saves oil, keeps floors clean . . .**

oil flows to brush riding on chain controlled by solenoid and sight feed valves; easily installed

**Uses:** For automatically lubricating conveyor chains, assuring positive lubrication whenever the chain is running.

**Features:** Eliminates manual application; conserves lubricant; keeps floors clean. Oiler operates only when chain is running. Stainless steel solenoid valve is Underwriters' approved and is available in all commercial voltages and frequencies, including DC.

**Description:** Oiler feeds lubricant by gravity from a reservoir through a solenoid operated valve and a sight feed valve to a brush, which rides the chain; spreads and wipes required amount of lubricant evenly on the chain. Solenoid valve can be wired across the line of the driving motor, which turns on the oiler only when the chain runs. Drop feeding of lubricant through the sight feed valve to brush can be adjusted, and adjustment held by means of a friction lock. For ease of installation, a mounting shank is provided with thread and nut.



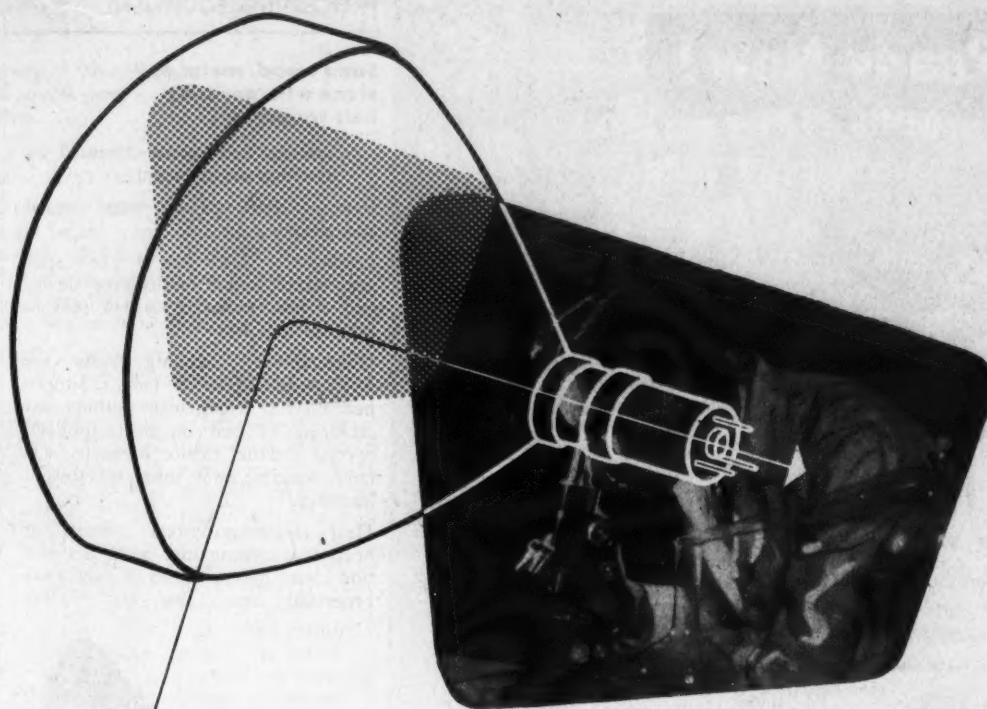
Solenoid operated chain oiler

Specially designed brush is of 2" diameter. Chain oilers with dual brushes are also available with a center distance of  $3\frac{1}{2}$ " between brushes. Wider distances can be provided. Dual brush oilers can be used to ride two independent chains or wide chains up to 4". By turning the oiler on mounting shank an infinite number of brush positions can be obtained.

Six oil reservoir sizes range from 9 oz to 1 gal. Offered in choice of unbreakable "Lucite" or glass for temperatures above 160°F. Oilers have aluminum alloy bodies.

Manually operated chain oilers are also available. They have a needle valve actuated by a toggle shut-off on top of oiler.

**Source:** Chain oilers are made by Oil-Rite Corp., Dept. CP, 3405 S. 13th St., Milwaukee, Wis. . . . or for more information check CP 6979 on handy form, pages 2 and 3.



## **THE VISION BEHIND YOUR TELEVISION SCREEN**

**Mallinckrodt Chemicals of almost unbelievable purity help "brighten the picture" in TV-and many other products**

The quality of a television image depends largely on the quality of the chemicals that go into the complex makeup of the tube: cathode emissive material, phosphors, and screen-laying solutions.

Typical of the Mallinckrodt Fine Chemicals for television is our special grade of **Sodium Sulfate**. Impurities are reduced to such infinitesimal traces that chemists can scarcely believe its analysis (left).

The far-sighted vision of Mallinckrodt research that gives the industry such products today may give your products better reception tomorrow. Starting materials of Mallinckrodt uniform purity help reduce rejects, maintain higher quality at lower cost in many plants. They may do the same in yours, too. Call your nearest Mallinckrodt representative or write:

### **QUANTITATIVE SPECTROGRAPHIC ANALYSIS OF A TYPICAL LOT OF MALLINCKRODT SPECIAL SODIUM SULFATE**

Copper	Less than	0.3 ppm
Silver	Less than	0.1 ppm
Bismuth	Less than	0.1 ppm
Cobalt	Less than	0.5 ppm
Chromium	Less than	0.5 ppm
Cesium	Less than	0.1 ppm
Iron	Less than	0.2 ppm
Lithium	Less than	0.9 ppm
Manganese	Less than	0.1 ppm
Nickel	Less than	0.5 ppm
Aluminum	Less than	15.0 ppm
Barium	Less than	0.1 ppm
Cadmium	Less than	0.1 ppm
Lead	Less than	1.2 ppm
Silicon	Less than	1.0 ppm
Tin	Less than	0.3 ppm
Strontium	Less than	0.1 ppm
Titanium	Less than	0.5 ppm
Zinc	Less than	1.0 ppm



## **MALLINCKRODT CHEMICAL WORKS**

Mallinckrodt St., St. Louis 7, Mo. / 72 Gold St., New York 8, N. Y.

CHICAGO • CINCINNATI • CLEVELAND • LOS ANGELES • MONTREAL • PHILADELPHIA • SAN FRANCISCO  
Manufacturers of Medicinal, Photographic, Analytical and Industrial Fine Chemicals

When inquiring check CP 6980 on handy form, pgs. 2-3

# Ready Now!



## TWO NEW R-C BULLETINS

for smaller volume, moderate pressure applications

If you are handling gas or air for any of the purposes listed below, or for similar applications, you need these two new bulletins on R-C Rotary Positive AF Blowers and XA Gas Pumps.

### 1. Air for combustion with oil or gas burners, small cupoles, coke-fired forges, etc., in:

Iron and steel works  
Food processing industries  
Neon sign shops  
Chemical processes  
Nonferrous foundries

Asphalt heaters  
Smelters  
Oil-fired forges  
Bakeries  
Ceramic, brick and tile mills

### 2. Aerating and agitating liquids, in:

Ice plants  
Sewage and industrial waste disposal  
Electroplating, engraving and electrotyping  
Fish tanks or trucks, also shallow lakes  
Oyster washing

Water treatment  
Protecting dams from ice  
Fruit, vegetable and poultry washing and cooling  
Blending vinegar, fruit juices, etc.  
Compounding oils

### 3. Miscellaneous pressure or suction uses:

Pneumatic conveying of grains, insulation and liquids  
Rock dusting in mines  
Dust collecting systems  
Low pressure sandblast  
Respirators and safety helmets  
Testing rubber balloons, etc.  
Cleaning forging dies, motors and machines  
Boosting inlet pressure of compressors

Drying barrels and drums  
Blowing cake off filters  
Air seal for bearings of rock crushers, etc.  
Pneumatically controlled valves  
Steam garment presses  
Printing presses  
Paper folding machines  
Vacuum chucks  
Drying yarns, textiles, etc.

### 4. Gas Pumps for:

Boosting fuel supply to industrial furnaces  
Chemical processes and refineries  
Boosting pressure from small gas wells  
Neon sign shops

Gas sampling equipment  
Inert gas generators  
Exhausting oil vapors  
CO<sub>2</sub> collectors  
Boosting supply to gas engines

These bulletins bring you up to date on construction, capacities, regulation, control and other details on R-C Type AF Blowers (Bulletin 21-B-37) and Type XA Gas Pumps (Bulletin 31-B-17). Send for them or write us about your needs, for engineering analysis, without obligation.

ROOTS-CONNERSVILLE BLOWER CORPORATION  
503 Richland Avenue, Connorsville, Indiana

# ROOTS-CONNERSVILLE

ONE OF THE DRESSER INDUSTRIES



When inquiring check CP 6981 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**Sand wood, metal or stone with portable belt sander . . .**

endless belts easily centered by tracking arrangement

**Uses:** For sanding wood, metal and stone.

**Features:** Unit has a direct spur gear drive, rapid belt-change device and a heat radiating system said to increase belt life.

**Description:** Sanding belts are 4 1/2" wide and 26" in length. Simplified tracking arrangement permits easy centering of belt on roller pulleys. Special internal device prevents belts from wearing away inner surfaces of housings.

Heat, radiating system consists of open-end construction, with belt motion creating air currents to blow away generated heat; also heavy-section



Sander with dust collector

aluminum fins to conduct heat away to a flat radiating surface which forms the top housing of the tool.

Two models are available with or without dust collecting system which consists of suction fan and collection bag. Selection of sanding belts and a cloth polishing belt are available for use with the sander.

**Source:** Portable electric belt sander is made by Independent Pneumatic Tool Co., Dept. CP, 175 North State St., Aurora, Ill. . . . or for more information check CP 6982 on handy form, pages 2 and 3.

### Offer CO<sub>2</sub> regulator catalog

Both single and two-stage CO<sub>2</sub> pressure regulators are described in detail in 12-page illustrated catalog. Includes regulator selector guide, as well as pages on accessory equipment and regulator operating hints. Suggests application in industrial processes, laboratories, and special applications.

Cat. ADPC-16, issued by Pure Carbonic, Incorporated, 60 East 42nd St., New York 17, N. Y. When inquiring specify CP 6983 on handy form, pages 2 and 3.

# NO GLANDS NO GASKETS NO VALVES

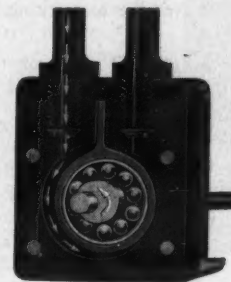
IN THE

## VANTON

NON-CORROSIVE

Flex-i-liner

## PUMP



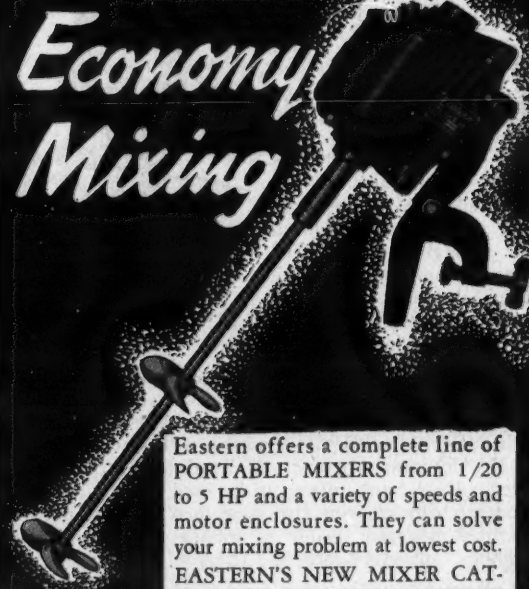
Fluid never touches metal. The "Flex-i-liner" is actuated by a rotor mounted on an eccentric shaft creating a "squeeze" pressure action and resulting in a positive displacement of the fluid.

- Corrosion Free
- Self Priming
- No Stuffing Boxes
- Low Maintenance
- No Contamination
- No Check Valves
- Positive Displacement
- Self Lubricating

Available in fractional to 300 G.P.H. Capacities  
Literature will be mailed promptly on request.

VANTON PUMP CORPORATION  
EMPIRE STATE BUILDING DEPT. PR NEW YORK 1, N. Y.

When inquiring check CP 6984 on handy form, pgs. 2-3



Eastern offers a complete line of PORTABLE MIXERS from 1/20 to 5 HP and a variety of speeds and motor enclosures. They can solve your mixing problem at lowest cost. EASTERN'S NEW MIXER CATALOG 500 GIVES COMPLETE MIXER SELECTION INFORMATION, WRITE TO DEPT. RA

Eastern INDUSTRIES INC.  
REGENT ST. EAST NORWALK, CONN.

When inquiring check CP 6985 on handy form, pgs. 2-3





## For Longer Filter Life

Abrasion damage in your filtration processes can be avoided by the use of SOLKA-FLOC. SOLKA-FLOC is capable of removing iron by adsorption. In addition, its filter cakes may be ashed for disposal or recovery of metals, or even in some cases sold as animal feed.

This remarkable filter aid is all cellulose. For appropriate sample selection, describe your filtration system to our Technical Service Department.

# SOLKA-FLOC

**BROWN COMPANY**

500 Fifth Avenue, New York 18, N. Y.  
Brown Corp., Sun-Life Bldg., Montreal, Canada

FOREMOST PRODUCERS PURIFIED CELLULOSE

When inquiring check CP 6986 on handy form, pgs. 2-3

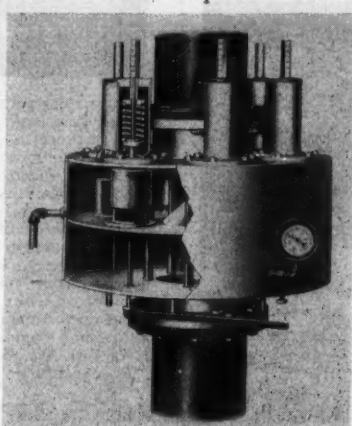
## PROCESSING EQUIPMENT

**Avoid "wire drawing," "hunting," "chattering" with multi-port back-pressure valve . . .**

one type for steam pressure 0-20 psi; another is atmospheric relief valve for vacuum service

**Uses:** For back pressure and relief applications in heating systems, power plants and process operations. Made in two types, one of which (Type 135W) will maintain steam pressure at any desired point between 0 and 20 psi. The other (Type 136W) may be used as an atmospheric relief valve for vacuum service.

**Features:** Inner valve consists of an inverted cup which slides on a piston cast integral with the valve



Back pressure & relief valve

seat. Inlet pressure enters chamber between cup and piston through a restricted opening in center of piston. Narrow seating edge of cup eliminates nearly all venturi effect of high velocity steam, which is prime cause of poor regulation and "chattering." In addition, restricted opening into cup chamber makes it an effective dashpot.

Individual and positive testing or setting of each valve unit can be done without dismantling valve. Moreover, repairs or replacement of one of the units does not prevent operation of valve as a whole. This very practical feature is possible because the units are independent of each other and because the large capacity of the valve permits operation without one of the units.

**Description:** This multiport valve is essentially an assembly of several single port valves developed by this manufacturer for steam user.

Excellent regulation of inlet pressure from closed to full open valve position is accomplished by several means. The spring is unusually long; its several inches of initial compression minimize increases in spring tension due to valve lift. The effective area of the cup type inner valve is constant at all positions of valve opening. Finally, the velocity head of the stream flowing through the valve is used to increase the static pressure in the cup, overcoming the small change in the spring tension as the valve approaches full open.

With these valves "wire drawing" and "hunting" with pulsating flows are virtually eliminated because the individual valve units can be set to open in sequence. Thus, at small increments of pressure, only one valve at a time is in throttling position.

Welded, all-steel construction of the valve body provides strength with a minimum of weight. All vertical loads are carried by struts to avoid distortion of any part of the valve. For installations requiring frequent adjustment or water sealing, suitable accessories are available.

**Source:** Klipfel Valves, Inc., Dept. CP, (Div. of Hamilton-Thomas Corp.), Hamilton, Ohio . . . or for more information check CP 6987 on handy form, pages 2 and 3.

## Your Best Protection

**FOR FLAMMABLE LIQUID, GAS AND ELECTRICAL FIRES**

GASOLINE  
OIL  
LP-GAS  
NAPHTHA  
BENZENE

ALCOHOL  
LACQUER  
VARNISH  
SOLVENTS  
PAINTS, ETC.



# ANSUL

## DRY CHEMICAL FIRE EXTINGUISHERS

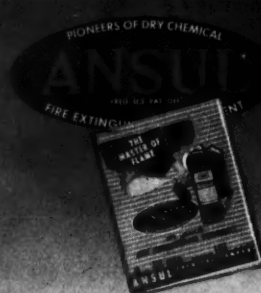
They're most dependable tool. Years of field service for all kinds of industrial applications has resulted in outstanding design features available ONLY in Ansul Dry Chemical Extinguishers.

**FIRE PROTECTION** by the dry-chemical method has proved most effective as well as most economical. And only Ansul offers a complete line of hand, wheeled and automatic dry chemical fire extinguishers. Investigate Ansul today for the protection of special hazards.

Send for the Ansul Card. You will receive a variety of helpful printed matter. Included is our latest booklet which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Fixed Systems and Ansul 2000 lb. Storage Units.

### ADVANTAGES

1. Quick, Positive Extinguishing Action.
2. Recharge on the Spot (No special tools needed).
3. No Annual Recharge Necessary.
4. Low Maintenance Costs.
5. ANSUL PLUS-FIFTY Dry Chemical used Exclusively.
6. Long Range Stream.
7. Effective in Winds and Drafts.
8. Stream pattern forms heat shielding screen to protect operator.
9. Listed and Approved by Underwriters' Laboratories, Inc., and Factory Mutual Laboratories.

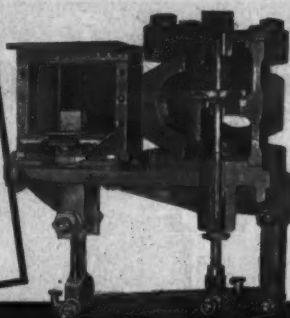


**ANSUL CHEMICAL COMPANY**  
FIRE EXTINGUISHER DIVISION, MARINETTE, WISCONSIN  
DISTRIBUTORS IN PRINCIPAL CITIES IN THE UNITED STATES, CANADA AND OTHER COUNTRIES

When inquiring check CP 6988 on handy form, pgs. 2-3

Match it against  
your needs

- Provides full flow instantly
- Direct acting—no pilot valve
- For differential pressures up to 150 lbs.
- For temperatures up to 365° F.



## NEW Automatic Valve

Brings new advances — Serves new uses

Now you can get a dependable, instant-opening automatic valve for practically all liquid level or flow control needs. This new Johnson Valve combines all the basic advantages of a direct-acting solenoid valve with the ability to operate under high differential pressures—up to 150 lbs. in some sizes. Its immediate response eliminates any time lag, or wiredrawing of valve or seat. The single seat construction dispenses with auxiliary pilot valves, minimizes danger of clogging. Can be used with hot and cold water, steam, oil, and other process liquids.

New bulletin shows wide scope of the Johnson Solenoid Valve; ask for copy



The Johnson Corporation

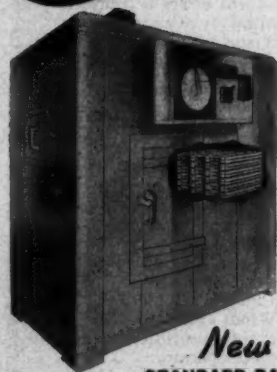
826 WOOD ST., THREE RIVERS, MICH.

When inquiring check CP 6989 on handy form, pgs. 2-3

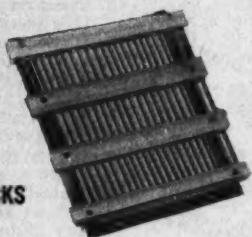
For Critical  
Test Drying

## TRENT "FOLDED and FORMED" HEATING ELEMENTS

"Folded-and-Formed" Electric Heating Elements are standard equipment in the Test Dryers manufactured by The National Drying Machinery Co., Philadelphia. These machines are used to establish proper operating speed, air velocity, temperature, etc., for large-scale drying of chemicals, pharmaceuticals, ceramics and other products. Accuracy is a must.



New  
STANDARD RACKS



"Folded-and-Formed" Heating Elements, long noted for their unequalled efficiency, long life and low-cost operation, are now available in standard 8" x 12" racks, providing new convenience and adaptability in the widest range of applications. Five year guarantee. Write for Bulletin 80-1.

TRENT INC.  
Electrically Heated Industrial Equipment  
235 LEVERINGTON AVE. PHILA 27, PA.

When inquiring check CP 6990 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

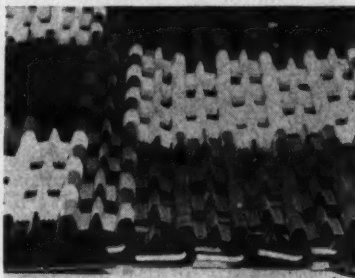
### Vinyl plastic links, woven on spring-steel network, make tough matting . . .

withstands severe use, including grease and oil; features include non-slip design, fade-proof colors

**Uses:** Linked plastic floor matting for withstanding severe wear, even where grease or oily conditions exist. Also for safe footing or efficient dirt-removal from shoes.

**Features:** Will not absorb soil or discolor with use or age. Fade-proof colors. Easy to clean. Non-porous and non-absorbent. 100% greaseproof. Long-wearing. Any desired pattern. Non-trip beveled nosing. Non-slip, even when wet.

**Description:** Constructed of vinyl plastic links woven on rust-resisting spring-steel wire network. One side of each link is slightly corrugated to prevent slipping; the other side is ridged to effect a good dirt-removing surface.



Vinyl plastic matting

Furnished in any width up to 5', and in any desired length. Brilliantly-colored links are green, red, brown, white, and black.

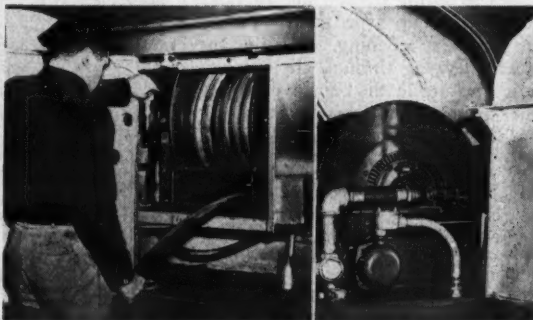
**Source:** American Mat Corporation, Dept. CP, 1728 Adams St., Toledo 2, Ohio. . . or for more information check CP 6991 on handy form, pages 2 and 3.

### Reel, unroll hose at speeds both safe and adequate with explosion-proof motors . . .

quiet, positive drive uses 2 sprockets and chain; only control is handy pushbutton

**Uses:** For safe, efficient handling of hose by power reels in chemical plants, bulk plants, fueling pits, similar installations.

**Features:** While electric drive units on hose rewinding equipment have been most satisfactory, they are generally of high speed type necessitating a means of reduction to



Oil hose reels operate with UL-approved motors

safe winding speed. Use of reducing gears results in excessive power, sometimes dangerous to hose or operator.

Also, most reel drives use automobile starter motors which are not explosion-proof and which are usually connected not in conduit, but in the open, where arcing sparks have free access to explosive vapors and inflammable liquids.



LARGEST  
CENTRIFUGAL  
EVER MADE  
AN AT&M  
LINK SUSPENDED  
CENTRIFUGAL

New  
centrifuging  
developments  
speed  
chemical  
processing

Put current advances in centrifuging to work for you! AT&M Centrifugals, large or small, can save you time, space, costs on all types of processing including impregnation, extraction, filtration, dehydration, coating, precipitation, sedimentation. Made in all machinable metals, these centrifugals have many special features, handle a remarkable variety of materials. In fact, because of AT&M's free wheeling drive, they successfully handle materials that ordinarily could not be centrifuged.

Why not send us a sample of your material for confidential analysis and recommendation? No cost or obligation. American Tool & Machine Company, 1425 Hyde Park Ave., Boston 36, Massachusetts.

SAVE TIME, SPACE AND COSTS WITH  
**A.T. and M.**  
CENTRIFUGING

When inquiring check CP 6992 on handy form, pgs. 2-3

## Chemical Resistant RUBBER PARTS

### FEATURE LONG SERVICE LIFE UNDER HIGHLY CORROSIVE CONDITIONS

Excellent resistance to chemicals, both concentrated and diluted, is feature of rubber parts fabricated from the new STALLITE 863 compound. This new rubber is recommended for parts subject to aniline, acetone, ethyl chloride, and numerous other chemicals.

STALLITE 863 has high resistance to animal fats, vegetable oils, ozone, oxygen, acids, alkalis, steam, extreme weathering, sunlight and dry heat.

STALLITE 863 rubber parts have outstanding flex and abrasion resistance, and dielectric properties make them suitable for use in electrical equipment.

The Stalwart Rubber Company can furnish molded, extruded, and die-cut rubber parts fabricated from STALLITE 863 for use as seals and stoppers for chemical containers, gaskets and washers for systems handling highly corrosive acids or alkalis, tubing for installation in corrosive atmospheres, or for conveying dilute or concentrated chemicals.

Write for complete specifications today.

Specify Stalwart for Quality Custom Rubber Products  
**STALWART RUBBER COMPANY**  
3231 NORTHFIELD ROAD  
BEDFORD, OHIO

When inquiring check CP 6993 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## PROCESSING EQUIPMENT

Motors used with these reels are especially built for this purpose. They are classified as Underwriters Approved Class 1, Group D, explosion-proof, heavy duty, with permanently lubricated ball bearings. Sealed pushbutton is the only control needed.

**Description:** Motor is designed to be installed and connected with conduit so that it is sealed and safe. Drive is quiet and positive, using only two sprockets and a chain. No gears are shifted, no clutch is engaged or disengaged. Balance of power and speed are maintained as closely as possible to provide safe rewind speed and ample, but not excessive, power for average applications.

Sealed motor needs no attention. Simplicity of construction and operation reduces maintenance costs to a minimum.

Hose reel with explosion-proof motor is now available for truck installations, and can be supplied complete with approved junction box, pushbutton switch, tubing, fittings, 2/0 ga. cable, twin wire, solenoid switch, connectors, terminals and special insulating tape. Available in practically all common voltages, AC or DC.

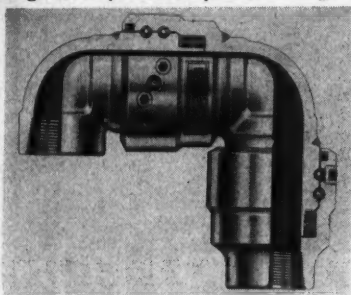
**Source:** Hannay hose reel, with motor, is built by Clifford B. Hannay & Son, Inc., 11 No. Pearl St., Albany, N. Y. . . . or for more information check CP 6994 on handy form, pages 2 and 3.

**Fluids at 12,000 psi, 225°F, or less, carried by swiveled pipe coupling . . .**

rotates 360° in all planes; made in various metals for low pressures, steel for high pressures

**Uses:** For conveying fluids, under high or low pressures, through a pipe that swivels or rotates a full 360° in all planes. For pressures from vacuum to 12,000 psi and temperatures to 225°F. Designed for average speed of rotation not exceeding 60 rpm.

**Features:** Highly compact. Streamlined throughout. No projections, bolted flanges, threaded sleeves, locking rings or keys. Full pressure range covered automatically without manual adjustment of packing. Precision-built.



Call bearing swivel pipe coupling

Double, metal-backed packer assembly consists of two packers, each consisting of a T-shaped metal backer to which a pair of synthetic rubber lips is vulcanized and bonded. Each backer functions in its own individual chamber. Edges of metal backer flare outward against walls of packer recess, forming a full metallic seal under all pressures.

High-pressure couplings are steel; low-pressure types are aluminum, bronze, malleable iron or steel. Manufacturer's engineering department will develop couplings for high-speed rotation, low torque, special applications.

**Source:** Gil-Lair Products, Inc., Dept. CP, 81 Masonic Court, Pasadena 3, Calif. . . . or for more information check CP 6995 on handy form, pages 2 and 3.

# These Two Valuable "Tools" of V-BELT DRIVE Design and Application

. . . are **Yours** for the Asking!

The Gates "GUIDE for SELECTING or DESIGNING V-BELT DRIVES" is widely recognized as the most *comprehensive* and *complete* book of its kind—and also the *easiest to use*. It enables you to find all the possible combinations of stock drives for your machine with the *least amount of calculation*—and almost *automatically* gives you the drive of *lowest price* that will be adequate for the job.

## ✓ Saves You Time, Work and MONEY

The GUIDE tells all about "Design Horsepower" and Speed Ratios—and by merely *scanning* a page of GUIDE designs which use the *stock pulleys* that meet your needs, you can quickly determine the center distances that will fit your equipment layout while, at the same time, enabling you to use *standard belts*!

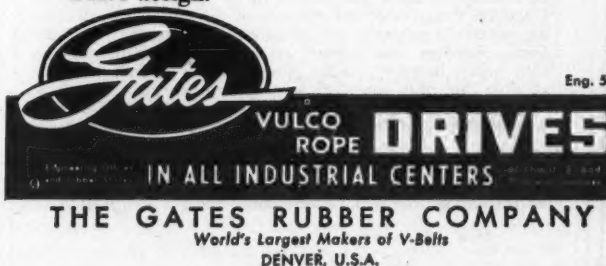
## ✓ You Can Design ANY Drive

The Gates GUIDE tells *when* you can use a V-Flat drive—and gives you a simple way to choose a practical V-Flat design using *stock driver sheave* with whatever flat pulley you may already have on hand.

As a matter of fact, by using the Gates GUIDE you can design—with a *minimum of calculation*—any kind of V-Belt drive for every kind of operation—including quarter-turn drives and Dubl-V drives.

## ✓ Written By GATES Engineers

The GUIDE is compiled and written by Gates Engineers. It embodies their specialized knowledge gained through operating the largest V-Belt testing laboratories in the world! Here, an average of *32,000 hours* of testing *per week* are run on V-Belts alone! No wonder the Gates "GUIDE for SELECTING or DESIGNING V-BELT DRIVES" is regarded by Engineers as the *authority* on V-Belt Drive design.



Also, A Monthly Report of All That's New and Progressive

The Gates "INDUSTRIAL NEWS," published monthly, gives interesting "case histories" of V-Belt drive installations designed and used by practical operating men and engineers. These case histories are selected from thousands of applications. Among other things they show—what can be accomplished with V-Belts—how to install various drives—unique applications—unique uses—examples of savings—and other valuable "how-to-do" ideas.

Whether you are a practical operating man or a design engineer, you can save much time, hard work and money by having these useful Gates publications. Just ask for them—using the coupon below. They will be sent to you without cost or obligation of any kind!

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☐ Gates "INDUSTRIAL NEWS," published monthly.

Name \_\_\_\_\_

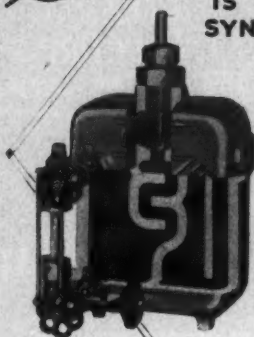
Position Held \_\_\_\_\_

Name of Firm \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

When inquiring check CP 6996 on handy form, pgs. 2-3

# Simplicity IS SYNONYMOUS WITH



**COE DRAINATORS**

SIMPLIFIED DESIGN  
NO MOVING PARTS  
NO ANNUAL REPAIR  
BILLS

SIMPLIFIED PIPING  
FITS INTO LINE  
LIKE A VALVE

SIMPLE TO ADJUST  
SIMPLE OPERATION

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## \$500.00 in Annual Awards plus awards of \$25.00 each for

### New Solutions of Processing Problems

(See announcement, page 4)

#### The Rules:

- 1) "New Solutions" will be considered for editorial treatment on the basis of their: 1) Fact-content, 2) Practical value to readers, and 3) Adaptability to an article stating a specific chemical processing or affiliated problem, how it was solved, and the results achieved as compared to results formerly.
- All "New Solutions" must pertain to an actual, specific case not previously published in *Chemical Processing*. Literary ability is unnecessary; all material will be edited by our staff and "cleared" through the respective manufacturers before publication.
- To determine if your fact-article possesses the necessary elements to qualify for presentation by our editors as a "New Solution", check your information against that contained in articles appearing in the "New Solutions" section of this magazine, page 8. However, if your "New Solution" is a worthy one, even though some of your data may be too sketchy, our editors will work with you to develop the missing facts.
- 2) All entries must contain the following information:
  - a) Sender's name, title and plant address.
  - b) Name and address of the plant or company where the problem occurred.
  - c) Name and address of the company, or companies, whose materials, equipment or consultation were employed in solving the problem.
  - d) A factual summary showing: 1) the problem that existed, and why a change was necessary; 2) what was done to overcome the problem; 3) a comparison of results, both before and after the problem was solved, showing in facts and figures, or percentages, the tangible and concrete degree of accomplishment, as well as any additional benefits that were realized. Be specific. This will help you as well as the editors.
- 3) Advertising, publicity, publishing, sales and sales promotion executives and personnel shall not be eligible to compete, regardless whether affiliated with a manufacturer, advertising agency or otherwise.
- 4) At least two months should be allowed between the date of mailing an entry and the date of its possible publication. Some "New Solutions" may take longer than others, particularly where facts are inadequate, or where pre-publication approvals must be obtained from more than one manufacturer.
- Because of this, no material submitted for these awards will be published prior to the May, 1950, issue of *Chemical Processing*. Qualified material published in May and subsequent issues of *Chemical Processing*, up to and including April, 1951, will be eligible for annual awards of \$250, \$150 and \$100 for first, second and third best reader-submitted "New Solutions", respectively. Winners of annual awards will be announced within three months after publication of the May, 1951, issue.
- 5) All reader-submitted "New Solutions" will be acknowledged as promptly as feasible.
- 6) Published material originating from reader-submitted "New Solutions" will be identified as such, and the sender's name published along with a special "Locator" index for finding such articles in a particular issue.
- 7) All manuscripts become property of Putman Publishing Company, and will not be returned. Awards of \$25 shall be contingent upon publication in the editorial columns of *Chemical Processing*, and decision of the editors in selecting or rejecting material for editorial development shall be final. Readers may submit as many "New Solutions" as they wish; however, each "New Solution" article shall be eligible for only one \$25 award, and one annual award, regardless if published in one or more publications of Putman Publishing Company.
- 8) Judging of the three best reader-submitted "New Solutions" of the year will be handled by an Editorial Awards Committee consisting of 10 impartial reader-judges. Members of this committee will be announced later.

Mail all entries to:

AWARDS EDITOR

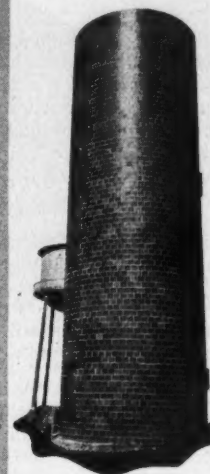
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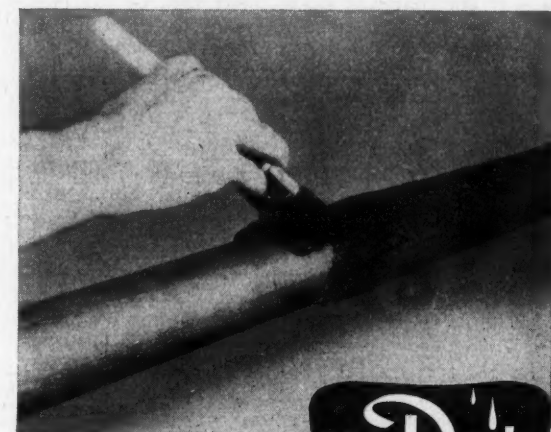
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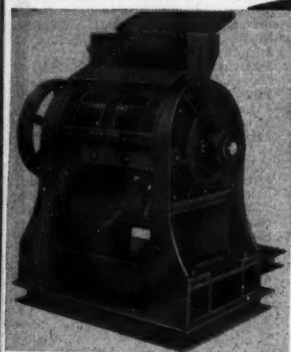
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## Convention & Exhibit Schedule

March 26-31. American Chemical Society (117th National Meeting), Houston, Texas.

March 28-31. National Plastics Exposition, Chicago's Navy Pier.

April 4-7. National Association of Corrosion Engineers, Jefferson Hotel, St. Louis.

April 4-8. Chicago Technical Societies Council (National Production Exposition), Stevens Hotel, Chicago.

April 5-7. Midwest Power Conference (12th Annual Meeting), Sherman Hotel, Chicago.

April 9-13. American Chemical Society (117th National Meeting), Bellevue-Stratford Hotel, Philadelphia.

April 16-20. American Chemical Society (117th National Meeting), Statler Hotel, Detroit.

April 24-27. National Packaging Exposition, Chicago's Navy Pier.

April 25-27. American Wood Preservers' Association, Rice Hotel, Houston, Texas.

May 1-3. American Oil Chemists' Society, Atlanta Biltmore Hotel, Atlanta, Ga.

June 8-10. American Institute of Chemical Engineers (Regional), Hotel Statler, Boston.

June 12-13. Chemical Specialties Manufacturers' Association (formerly National Association of Insecticide and Disinfectant Manufacturers), Drake Hotel, Chicago.

June 12-16. Fourth National Material Handling Exposition, International Amphitheater, Chicago.

Sept. 3-8. American Chemical Society (118th National Meeting), Chicago.

Sept. 5-9. National Chemical Exposition, Coliseum, Chicago.

Sept. 10-13. American Institute of Chemical Engineers (Regional), Minneapolis.

Sept. 18-22. National Instrument Conference and Exhibit, Buffalo.

Sept. 26-29. Industrial Packaging & Materials Handling Exposition, Philadelphia.

Nov. 13-16. American Petroleum Institute, Biltmore and Ambassador Hotels, Los Angeles.

Nov. 15-18. National Paint, Varnish and Lacquer Association, Fairmont Hotel, San Francisco.

### Filters — continuous vacuum, pressure; batch

Subject of 6 bulletins is filters: 1) pressure leaf filter — built especially for filtering products requiring high pressures, or where jacketing or insulation is necessary to maintain abnormally low or high temps (Bul. 113); 2) continuous vacuum, lime mud filter — for causticizing systems in pulp mills and chemical plants (Bul. 216); 3) continuous pressure or vacuum, precoat filter — designed to clarify solutions difficult to filter by other means... cake usually discarded (Bul. 217).

4) Continuous vacuum, horizontal rotary filter — filtering and washing are both visible (Bul. 218); 5) continuous vacuum, disc filter (Bul. 600); and 6) continuous vacuum filter — meets any mill condition (Bul. 701). Issued by Oliver United Filters Inc., Dept. CP, 33 W. 42nd St., New York, N. Y. When inquiring specify CP 7003 on handy form, pages 2 and 3.

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## Discussed in This Issue--- PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here; if you want more data you can write manufacturer direct . . . or turn to pages 2 and 3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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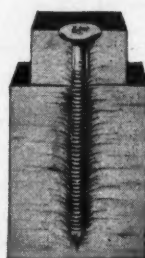


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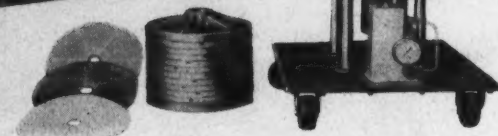
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## "That's Interesting"

### "Fold" projector light path to make it more compact

Coatings and techniques for controlling light reflections are utilized to produce glareless glass and transparent mirrors. "Beam splitters" for radar are being made by coating a piece of clear glass with solutions that increase reflections. The glass is thus transformed into a highly efficient semi-reflector capable of transmitting one image and reflecting another.

Slide projectors are receiving similar coatings. Now in production is a small projection unit in which the viewing screen is only a foot or two away from the observer. To achieve this the light path of the projector is "folded" to make it more compact. Reflection reduction coatings remove "ghost" images from the mirrors of the system and makes operation practical. (American Optical Co., Southbridge, Mass.)

### "Coal-to-gas-to-gasoline" pilot plant shut by lack of coal

The first of last month, Pittsburgh Consolidation Coal Company, Pittsburgh, Pa. announced its closing down of the gasification plant which has been operating at Library, Pa., for more than a year on a round-the-clock basis. Purpose of the plant had been to speed actual commercialization of the "coal-to-gas-to-gasoline" process. Joint work with Standard Oil Development Company has been done with painstaking care and great expense. It has been proven that the unit can operate on a caking coal and make a gas suitable for synthesis into oils and gasoline.

However, to succeed, a plant of the type planned must have cheap coal and complete assurance of a regular coal supply. A statement by George H. Love, President of Pittsburgh Consolidation Coal Company, points out that under prevailing conditions none of these things are available.

In 1949, the new Disco Plant at Imperial, Pa., was completed at a cost of several million dollars. The plant is designed to produce smokeless fuel to help meet the smoke problem in the Pittsburgh area. Lack of coal has prevented its operation at full capacity for any extended period and short supply has made its shut-down imminent.

The company has been studying the possibilities of making gasoline from natural gas in Texas by much the same process as used to convert coal gas into gasoline. There are huge reserves of cheap natural gas available.

Plans are to continue and even expand laboratory and exploratory work at Library with the hope that conditions will be different sometime in the future.

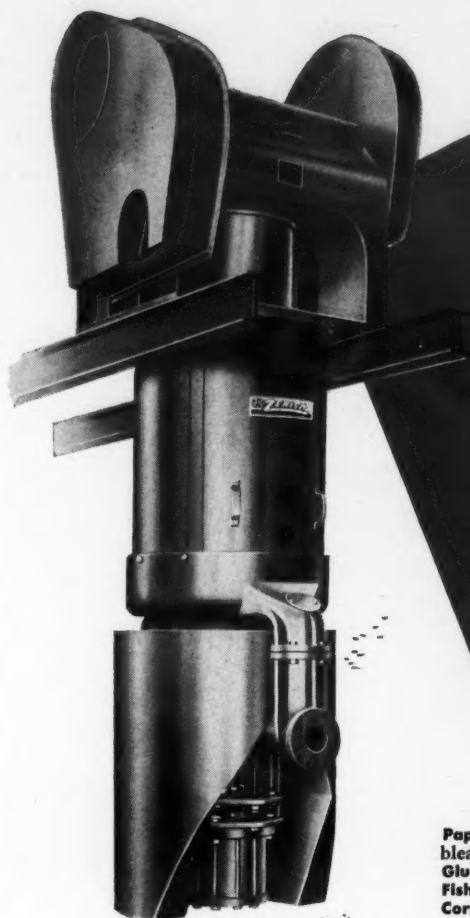
When coal conversion is required, experience abroad and research carried out by the Standard Oil Development Company and the Pittsburgh Consolidation Coal Company and others assure a workable process. In the meantime, many economies in construction and operation of a plant will have been realized through continuing research.

### Insulating gel supports weight and is insoluble in water

A novel insulating gel is the subject of a recent patent. The inventor has developed a particle with a great number of dead air cells, formed by walls of a porous gel, which being thin and irregular, permit gas to diffuse very slowly through the mass. Thus equilibrium conditions between the dead air and surrounding atmosphere can be maintained. Gel has enough structural strength to support considerable weight and is insoluble in water.

All this is accomplished by combining a solution of sodium silicate (Philadelphia Quartz Co. "N" is example cited here) diluted to about 20% solids with a solution containing 4% aluminum sulphate and 3.4% sulfuric acid.

These two solutions are heated to 290° F. and then mixed by spraying upward from a nozzle set in the bottom of a 14' tower heated with air at 600° F. At this temperature, the water vaporizes to form bubbles which are thus trapped in the gel formed by the reacting solutions. The beads that result have 92.5% solids and a bulk density of only two lbs per cu. ft. (Philadelphia Quartz Co., Public Ledger Bldg., Philadelphia, Pa.)



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5. More accurate control of chemical processing.
6. High yield of marketable by-products.
7. Aids in stream pollution problems.
8. Promotes good plant housekeeping.

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## A FEW TYPICAL APPLICATIONS

**Paper Pulp:** Undiluted black liquor recovery — de-inking — ultra high density bleaching.

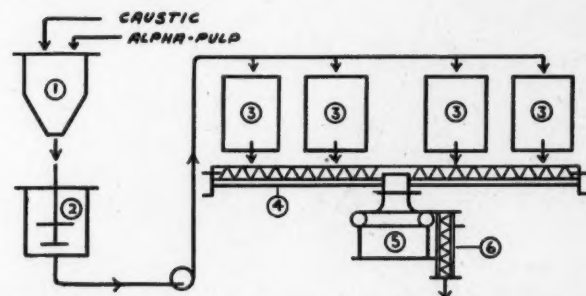
**Glue Plants:** Pressing tankage for water and grease removal.

**Fish Reduction Plants:** Water and oil from cooked fish wastes and whole fish.

**Corn Starch Plants:** Dewatering germ and fibre.

**Canneries:** Vegetable juice extraction, de-watering by-products.

**Rayon and Cellophane:** For the continuous production of alkali-cellulose in rayon, cellophane, C.M.C. etc. by the slurry system. (See typical flow chart below). Many other Applications.



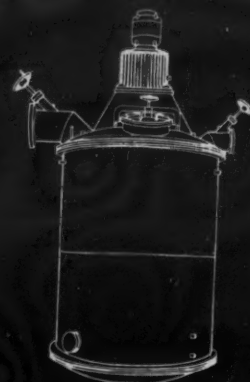
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2. Steep-tank.
3. The Zenith continuous pulp press delivering a uniform product at press-ratios of 2.8 to 1 or better on Alpha pulp.
4. Collecting and cooling conveyor.
5. The Zenith continuous shredder.
6. Cooling and compression screw to deliver the shredded AC at 20° C and a bulk-density of 22 lbs. per cubic foot ready for AC ripening. Capacity of the above unit is 3000 lbs. per hour based on the moisture-free weight of Alpha-pulp.

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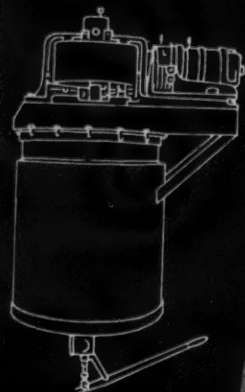
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ELECTRIC  
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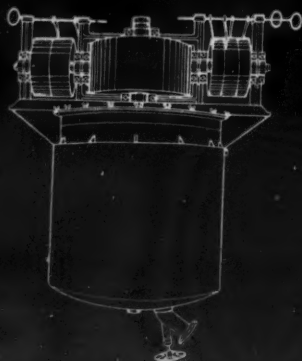
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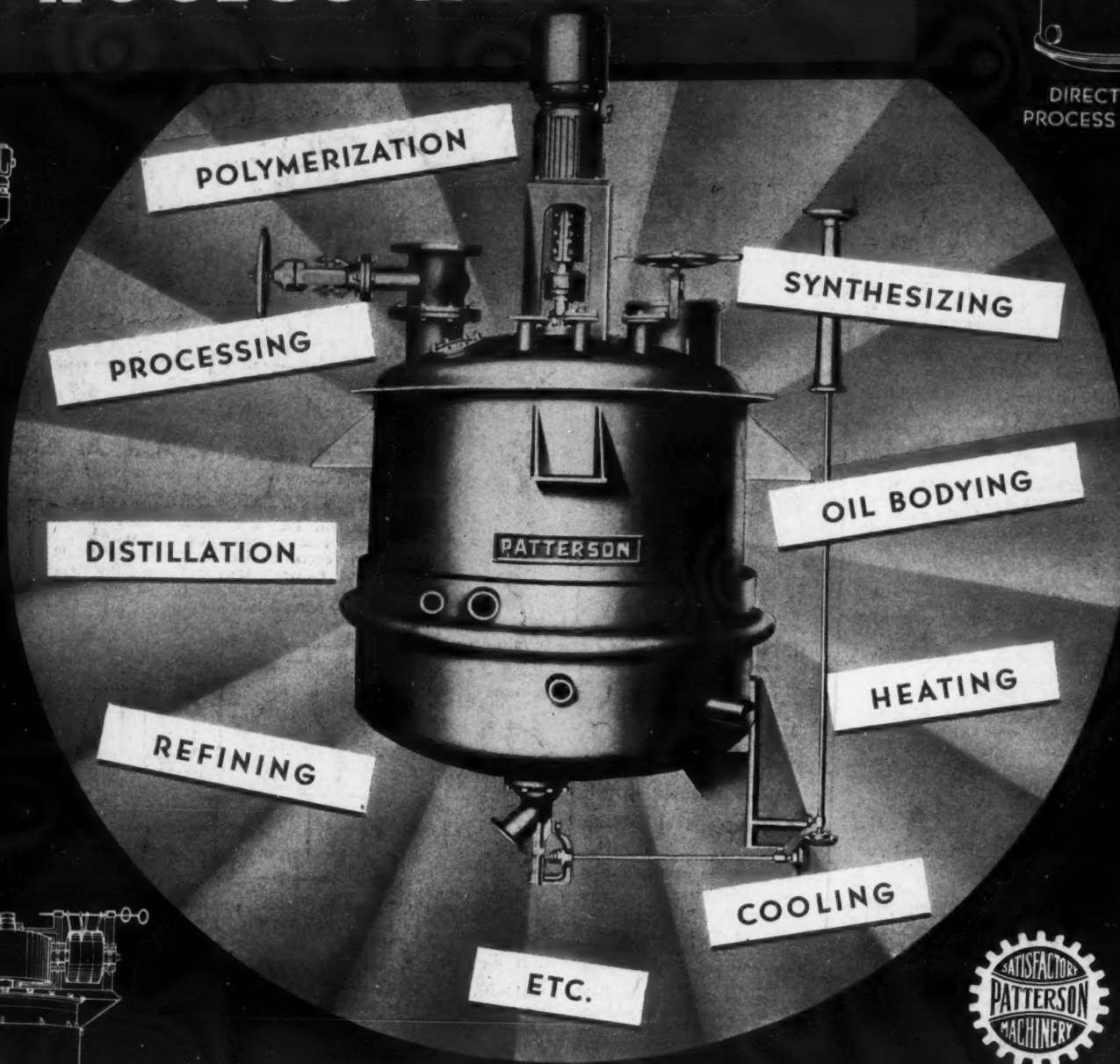
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